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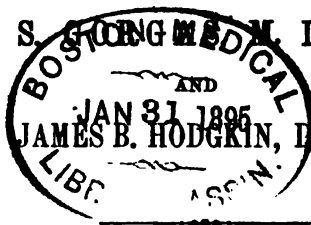




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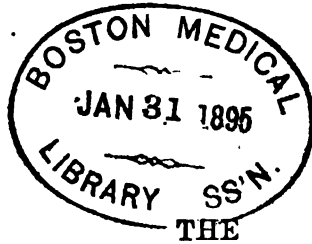
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ARTICLE I.

Plastic Filling, and the Basal Principles of the New Departure.—Continued.

BY J. FOSTER FLAGG, D. D. S., OF PHILADELPHIA.

ARTICLE II. ACCEPTED CREED.—*Some have faith in contour, others have faith in separation.*

ARTICLE II. NEW DEPARTURE.—*We do not believe that either has much to do with the final result.*

For years the discussion between contour and separation has gone on. With Arthur, Bonwill and Chupein for the A, B, C of the "separationists," and Atkinson and Webb as representatives of the whole alphabetic list of "contourists," no definite decision has yet been reached. Now it seems to us that if either was, in truth, decidedly the right way, it would have been found out by this time.

In regard to this contest *we* have been lookers on, and our statistics do not yet show us which is best. Contour fillings fail, and fillings in separations fail; and when the

contours fail it is said, "It ought to have been separated;" and when the fillings in the separations fail, it is said, "The separation is not made rightly." Meanwhile the teeth decay.

For me, in a strong, solid tooth, I would, for durability, just as soon make a contour filling as I would a separation; but on general principles and for comfort I prefer to give my patients the benefit of what is called "contour." My experience is that it is better than the separation—certainly on the score of comfort, and probably on the score of durability.

ARTICLE III. ACCEPTED CREED.—*Failure in operations is mainly due to defective manipulation.*

ARTICLE III. NEW DEPARTURE.—*Failure in operations is mainly due to incompatibility of filling material with tooth bone.*

Gentlemen, all the elegant fillers—high style, \$75, \$150, \$500 plug men—tell you that failures are due to defective manipulation. Now, gentlemen, if this is so, why don't you manipulate better? Simply because you cannot. And is it nothing against gold that men cannot manipulate it? Is it nothing that this has been proved by an experience of more than half a century? The record of to-day is not better than the record of fifty years ago. You talk about the "finer work," the "improvement in instrumentation," the "blessed rubber dam;" but with all these adjuncts, and while you have put all these gifts to tests which have proved their greatest capability, your results are: larger fillings, more difficult fillings, more tedious fillings, more painful fillings, more expensive fillings, less compensating fillings (both to yourselves and patients,) and *more decided failures*. I state this squarely. For every *one* of these large, difficult, tedious, painful and expensive fillings that have given a dozen years of service, I think you will acknowledge that I am within bounds when I say *a dozen* have proved failures.

My statistics show that the average of gold failures, for the last year, is greater than for any previous year. 100

gold failures were classified upon my tables last year, for the whole twelve months; and this year, up to this month, I have already 86, making a total, for 1877, of 103—many of them far worse failures. This is the truth. This shows what attempts are being made and what failures are the results.

It was only on last Friday morning that I renewed (by guarding) a gold filling, which had been introduced *less than three years* before in a cavity upon the *mesial face of the right upper second bicuspid, with the first bicuspid out*. I want you to think of this, and note the exceeding difficulty (?) of the original operation. The patient J. W., one of our largest car wheel manufacturers, told me he paid \$20 for the filling; and I showed him that I could pass a broad, thin instrument deep into the crevice between the filling and the tooth at almost any point. I told him that *I could not say* of such beautiful work what I believed the gentleman who did it would say of it, viz.: that it must have been *defective in manipulation*; but that I knew just how soft his teeth were (he had formerly been my patient, had left to see if he could obtain better results than I had been able to make for him, *and had returned*,) and that I believed the failure was due to *incompatibility of gold with tooth bone*. He said he thought \$7 a year was a little too much to pay for one tooth, and then I, naturally (for I am only human,) expatiated to him as I am doing to-night to you. I said, "Suppose, Mr. W., that my filling lasts for only three years. It will take me an hour to introduce and finish it, and I shall charge \$5. Your former operator charged you \$20, because it took him four hours. His work has proved dear, but mine cannot be called cheap, because it returns me the same as his does to him. It may be cheap to you." To which he replied: "Doctor, your argument is just that which the cast iron wheel men use against the steel wheel men, and we consider it solid."

We believe that "failure in operations is mainly due to incompatibility of filling material with tooth bone." This

again opens all the question upon which rests our vitality. When I tell you that, *experimentally*, the contact of gold and bone, amalgam and bone, tin and bone, and gutta-percha and bone, results, again and again, in greatest loss of substance in that bone which is in apposition with the *gold*, I say, "He that hath eyes to see, let him see; and he that hath ears to hear, let him hear." And when I see just the same thing occurring in the mouth every day that I practice, and then read that "experiments out of the mouth must be taken for nothing," I cannot but feel that such writers are "straining at gnats," while their patients are "swallowing camels."

ARTICLE IV. ACCEPTED CREED.—*A tooth that is worth filling at all, is worth filling with gold.*

ARTICLE IV. NEW DEPARTURE.—*A tooth that can be so treated as to be satisfactorily filled with anything, is worth filling.*

The fourth article of the accepted creed and its twin brother, "a tooth that can be filled at all, can be filled with gold," seem to me such perfect puerility that I have no patience with them. This latter enunciation is from our good friend Taft's last work on Dentistry—"up to the present status of the profession," the preface says.

The scathing criticism of this production in the *Cosmos* induced me to examine more closely than I might otherwise have done this effort of Dr. Taft's. Among things like "vacuums" between pulp-caps and pulps, I found this statement, that "a tooth that is worth filling at all, is worth filling with gold." But it is not the best, the most acceptable, the most expeditious, or the most comfortable way to do. It is not the most *serviceable* way to do. I assert that experience proves this; but beyond that, I most emphatically deny both assertions. I deny that "a tooth which cannot be serviceably filled with gold, is not worth filling." I deny that "any tooth which can be filled at all, can be filled with gold." No one, not even the most expert, can

fill with gold every tooth that can be filled. How much less, then, can the average respectable practitioner of dentistry do this thing! You may get gold into it, after a fashion—but you cannot fill it, according to your own ideal of what a filling should be.

On the other hand, with a plastic filling material it can be filled, and filled nicely, and so as to be comfortable and serviceable for many years. Experience has shown this. The profession, and the coming text-books, when they are truly “up to the status of the profession,” will admit it. Therefore we say that “a tooth that can be so treated as to be *satisfactorily* filled with *anything*, is worth filling.”

ARTICLE V. ACCEPTED CREED.—*Unskilled and unscrupulous dentists fill with tin covered with gold, thereby causing galvanic action, pulpitis, death of the pulp, abscess, and loss of the tooth.*

ARTICLE V. NEW DEPARTURE.—*Skillful and scrupulous dentists fill with tin covered with gold, thereby preventing decay and pulpitis, and thereby saving the tooth.*

Experience had proved that tin would save teeth which gold did not. The accepted belief was, *and is*, that it did so because of its softness and ease of manipulation (for which qualities, by the way, we have never heard it decried.) *Our* belief now is that it saves teeth because of its *low conductivity*, and because *it is itself attacked*. Experience had also proved that the tin wore out; and so, the happy combination which would save the tooth and yet not wear out having been devised, it was decried and defamed as “*unskillful and unscrupulous*.”

Fifteen years ago this was the accepted practice of my office. It is because of this principle that the operation of “guarding” with a crescentic guard of tin, amalgam or gutta-percha at the “vulnerable spot” has retained failing gold plugs by the hundred for continued usefulness. I, myself, had, up to April, 1877, 1,055 gold plugs, of my own and other operators, doing service *only* because they had

been "guarded" in this way. Gold doing well because it was *taken care of* by tin, gutta-percha or amalgam—a pretty picture!

ARTICLE VI. ACCEPTED CREED.—*A filling, to be good must not leak.*

ARTICLE VI. NEW DEPARTURE.—*A filling may be the best that is known for the tooth, and yet leak badly.*

How do we maintain this point? We hold that this is true because of the fact that gutta-percha makes a leaky filling. See this filling in this tube; every care was taken that it should not leak. It was packed even better than it could have been in a tooth, and yet, as you see, it leaks badly. But you will say that a glass tube is not analogous to a tooth. I am prepared for that. Here are small cups of ivory. This material is almost identical with that of tooth bone. These were filled, as you see, the one with red gutta-percha and the other with Johnstons' Premium Stopping; and yet both leak.

Why do we maintain it? We do so from the fact that *we wish to make it a basal principle, that mere leakage, itself, is not the thing which makes a filling capable or incapable of saving a tooth.* It depends upon what material leaks, and what it leaks in contact with. If a leak of vitiated saliva occurs between tooth bone and a material which is a *good conductor, and is itself unattacked*, then that leaky filling is very bad. But if even vitiated saliva leaks between tooth bone and a material which is, practically, a non-conductor, and which has a surface that is *neither bright nor oxidizable*, then leakage is *proved by experience* to be not practically detrimental. This we hold to be the reason why gold fillings "eat themselves out" of soft teeth in from two to five years; and why gutta-percha remains untouched (except by attrition,) and preserves such teeth for many, many years.

ARTICLE VII. ACCEPTED CREED.—*Gutta-percha, properly used, is good enough for temporary fillings.*

ARTICLE VII. NEW DEPARTURE.—*Gutta-percha, properly used, is the most permanent filling material we possess.*

When my friend, Dr. Hawes, was in my office for a part of two days, some months ago, I operated before him. Among other patients was a young lady from Orange, New Jersey. I showed him a line of several gutta percha fillings, in front teeth, which had been introduced seven years before. I showed him a gutta-percha filling in the buccal face of a left lower molar, which he thought was "somewhat cupped" and would "hardly pass for a permanent filling." The patient informed him that it had been doing service for *twenty* or *twenty-one* years, and I added that if it lasted as much longer, I should mark it down as permanent!

Twenty-six years ago Dr. G., of Philadelphia, came to my father, desiring his services. My father introduced eleven gold fillings—good, old-fashioned, solid, "straight from the shoulder" fillings. Besides these cavities, there were four enormous places in the four *wisdom-teeth* (poor teeth, according to accepted views,) and these were filled, "experimentally," three with amalgam and one (the buccal face of the right lower wisdom) with gutta-percha, with the idea that they might "last for a year or two." The last one of the eleven gold fillings was renewed a few months since, and the three amalgam fillings, *and the gutta-percha filling*, are still preserving their forlorn and worthless wisdom-teeth, as they have done for *more than a quarter of a century*.

These are not isolated cases. They are, far more, *typical* cases. I have, in the mouths of my patients, hundreds upon hundreds of gutta-percha fillings, which have been doing service for from five to fifteen years, and bid fair to continue so doing for years to come.

Gentlemen, I feel, when I introduce a gutta-percha filling into a large cavity on the buccal, mesial or distal face of a tooth—close to the gum, with frail walls, and almost into the pulp—that I have (if it be possible) saved that pulp. I feel that I have placed there a material which, even if it be

gradually softened and worn out, will save the tooth until the last thin stratum, only, still remains. I feel that if it wears, an easy, inexpensive reparation can be effected by the addition of a little more of the same material at any time. I feel that I have done my patient that real service which he or she had hoped to have bestowed.

This is why we say that "gutta-percha, properly used, is the most permanent filling material we possess.

ARTICLE VIII. ACCEPTED CREED.—*A good gutta-percha filling, in its proper place, is better than a poor gold one.*

ARTICLE VIII. NEW DEPARTURE.—*A poor gutta-percha filling in its proper place, is better than a good gold one.*

Some time ago a few of our Philadelphia gentlemen saw themselves on paper as saying almost too much in favor of gutta-percha; so they corrected it by publishing that they did not mean to say that gutta-percha was as good as gold; what they meant was, "that a real good gutta-percha filling, *in its proper place*, was better than a *poor* gold one." Mr. J. G. W. had a gold filling introduced upon the mesial face of the left upper lateral, by one of our best operators. In about two years the filling failed. It was renewed, and in less than two years this second filling failed. We think we have a right to infer that both these fillings were good ones. Upon the occasion of a third visit, a gutta-percha filling was hastily introduced, to serve merely, *as was stated*, a temporary purpose. While yet the temporary filling was in place, the gentleman's partner (a patient of mine) induced him to call upon me. I was told the story. I examined the gutta-percha filling. It bore evidence of its hasty insertion, having overhanging edges. These I trimmed with a warm instrument, and asked him to give me the first proof of his confidence in his partner's recommendation and my judgment, by allowing the gutta-percha filling to remain, as it was a proper place for it. Already that filling has lasted longer than either of the gold ones, and, from appearances, it will last far longer than both the gold ones together.

This is also not an isolated case, and it is from such instances that we deduce "that a *poor* gutta-percha filling, in its proper place, is better than a good gold one!"

ARTICLE IX. ACCEPTED CREED.—*Amalgam, per se, is a poor filling material.*

ARTICLE IX. NEW DEPARTURE.—*Amalgam, per se, is an excellent filling material.*

I do not mean to say that all you gentlemen think or say that amalgam is a poor filling material. But I do mean that this is the teaching of the most recent and accepted text-books and authorities. Read Taft, pages 93, 94 and 95, and you will see the "creed" of "Ann Arbor" and "Ohio."

I do not wish you to think, for a moment, that we regard amalgam as the *ultima thule*. By no means. While we recognize its great excellence, we also recognize its great deficiencies.

The relative durability of the three materials—gutta-percha, amalgam and gold,—is a question which I have been engaged upon for more than fifteen years; during which period I have endeavored to tabulate this matter by following the career of over *twenty thousand* fillings. Of course I recognize the impossibility of doing this with scientific accuracy. I admit that my result is merely a guess—but, gentlemen, I regard it as a *very close guess*—that, as the result of *average dentistry*, gold fails in fifteen years in 71 per cent. of its cases, and amalgam in 5± per cent. of its cases.

Understand me, this is *average dentistry*. It is not *poor dentistry*, for the gold efforts of such, you know, would not nearly reach such a standard. Neither is it truly "first-class" dentistry. If it were, I should be ashamed of first-class dentistry. But it is very close to what our profession, as a profession, is doing for those of humanity at large who come to us for services.

Now, when you reflect that all the good places, all the easy places, all the accessible places, as a rule (admitting

all exceptions,) are filled with gold; and that all the bad places, all the hard places, all the "forlornities," as a rule (admitting the exceptions,) are filled with amalgam, *we* think that it does not tell so badly for amalgam; while we say for the gold, that it is a pity it is so "incompatible with tooth bone."

For gutta-percha, with 2,000 fillings of an average duration of eight years (these were in carefully-selected places, but all in *soft* teeth,) the failure is but eight per cent.—160 failures, in soft teeth, in 2,000 cases, in eight years. These failures were mostly from disintegration of the gutta-percha. The action of the fluids of some mouths causes this material to soften, puff up and disintegrate. In such mouths gold is almost worthless for the average practitioner, except upon the articulating faces of the teeth; and in these mouths tin and amalgam have proven themselves our most reliable filling materials.

But you will say that gutta-percha fillings do not ordinarily last that way. That is because they are put in, definitely, only as temporary work, being removed in a short time to be replaced with work which is *called* permanent. The gutta-percha is almost always found (no matter how long it has been allowed to remain) *preserving the tooth* perfectly; and is frequently complimented by the operator for having done so, even while he is introducing his permanent filling, which, in truth, has often to be renewed sooner than would have been the case had he allowed his temporary filling to have remained.

Again, your instructions as to working gutta-percha, from the direction to "heat it on a porcelain or metal slab over a spirit lamp" (there is no surer method of ruining the material from over-heating) to the "holding of an instrument on the filling and pressing it till it is cool"—these instructions, I think, amount to nothing. Take a cavity in a lower second molar, first molar and wisdom-tooth in place. The cavity shall begin on the mesial face and deeply circumscribe the tooth, close to and partially under the gum,

until it has passed along the buccal and distal faces and impinged a little on the lingual face. There is a place to fill! You all have seen just such places, and they are excellent to fill with gutta-percha.

I have often listened to our good friend Atkinson, as with streams of intelligence scintillating from his flashing eyes, and his whole countenance beaming with enthusiasm, he would expatiate on the wonderful workings of the mallet in the "hands of intelligence." But I tell you, gentlemen, it would take no less than *four instruments* in the hands of *four intelligences* to press in such a plug till it got cold!

ARTICLE X. ACCEPTED CREED.—*The use of plastic filling material tends to lower the standard of dentistry, thereby diminishing its sphere of usefulness.*

ARTICLE X. NEW DEPARTURE.—*The use of plastic filling materials tends to lower that dentistry which has for its standard of excellence ability to make gold fillings, but very much extends the sphere of usefulness of that dentistry which has for its standard of excellence ability to save teeth.*

This is where we rest our case. It is for the *salvation of teeth* that I have come to speak to you to-night. I have spoken only with that end in view.

I don't wish to speak of good, strong teeth. I don't wish, *at this time*, to tell you of my practice of to-day—what I am experimenting on, what I am tabulating. I have only to tell you what I have done, and what conclusions I have arrived at as the result of experience and long years of practice.

I do not wish to say anything to you of the teeth which you are in the habit of filling successfully, and, as we express it, satisfactorily, with gold; teeth of a dense structure, whose cavities have walls so strong that you can impact a filling which lasts a life-time. But I do ask that you will gradually discontinue this packing of gold into teeth that are so poor, so frail, so unsubstantial, that it is, to say the least, doubtful whether the result will be credit-

able to your profession, or satisfactory to your patients. Remember, "\$7 a year seems to me too much to pay for one tooth."

Commence, if you will, with those poorer and more miserable teeth which you would condemn to the forceps, and fill them with plastic fillings.

You will soon be agreeably surprised with your results in the new direction. You will soon find that much that has been told you by tradition and text-books has no *reality* in it. It is true that our results are produced more easily, comfortably and economically to the patients, but they will not complain of that. It is true that our results are produced with greater ease to the operator, and, for this reason, it is argued by our opponents that we do it from "laziness."

But I tell you that it is not from laziness. It is from a desire to lay aside the forceps. It is from a desire that our patients shall eat upon teeth the roots of which, at least, are in their jaws. It is from a desire that they shall be exempt from the infliction of artificial work. It is from a desire to extend the blessings which the hand of our profession holds to bestow. It is that we may be sought rather than avoided, that we may be extolled rather than decried, that we may be esteemed rather than censured, that rather than be feared, we may be loved and *respected*.

It is for this that I have worked; and blessed be God that he has so sustained and directed me that I have, every day, fresh cause to believe that I have gained the love of my patients and the respect of my professional brethren!

And now I find on the programme "Incidents of Practice." I suppose it meant "incidents of *my* practice," and so I have come prepared with a few to offer you.

Since twelve years ago (July, 1865) I have been keeping the money record of five sets of teeth, among the softest and frailest of those under my charge.

These were poor enough; decayed through and through, so that you could *string* five or six in a row; broken off, decayed down to and under the gum. From 1865 to 1877

(twelve years) these teeth have been kept comfortably in order. Not one tooth has been lost from the five mouths during all this time. That alone is something. But in adding up the aggregate of all their bills, and dividing the total by five, it shows that those mouths have been kept in order for less than \$15 each per year (\$14.80.) This brings dentistry within the reach of many who have heretofore been deprived of its benefits. It brings it where it belongs—to be a blessing to the millions; and this is why we say that our practice “very much extends the sphere of usefulness of that dentistry which has for its standard of excellence ability to save teeth.”

Prof. J. G. Richardson had in 1869 a right upper lateral, right upper central and left upper central decayed and needed saving. The lateral and left central were filled with gold; but the right central, being much worse than either of the others, my advice was asked in regard to it before it was filled. I said it would be best to fill it with gutta-percha. “What! a front tooth?” was the reply. “Why, yes! why not?” said I; “the man wants to save his front tooth just as much as he would a back one!” So it was filled with gutta-percha. In a few months from that time the lateral ached so badly during an entire night, that in the morning (I think it was on Sunday—I was not in the city,) he called upon a dentist and insisted that it should be extracted.

In the course of time an ominous shadow passed over the left central, which told that its pulp had quietly died a natural death. It was entered, the pulp removed, and it is now doing good service as a pulpless tooth. But the worst of the three, the one that in 1869 most *needed* saving *has been saved*, and is, to-day, a living, healthy, brilliant tooth. I saw it but a few days since. The filling is a little worn. I have an appointment with him, to add a little gutta-percha to it, on my return, when, with fifteen minutes’ work, I shall start it off for another eight or ten years’ journey.

Mrs. McG., left upper lateral; in this tooth two gold fillings, one \$5, the other \$6, lasted fifteen years. By the

failure of both, the tooth had become pretty badly decayed. *Twelve* years ago a gutta-percha filling was introduced for \$4. With two trifling repairs, so trifling as to cost nothing, that filling has preserved the tooth perfectly.

Mrs. B., eleven years ago, had a range of gutta-percha fillings introduced by a gentleman in Germantown. Her teeth were very frail. The fillings cost \$25. In about two years, while visiting one of our Philadelphia gentlemen, she mentioned that it was two years since had had any work done. She requested an examination, and was told, *very emphatically*, that there was some great mistake, that there was nothing but *temporary work* in her mouth, and that *she* ought not to have any other than the *very best* which was *gold work*. All the gutta-percha fillings were removed and replaced with gold, except one poor molar, which was stated to be "worth nothing except gutta-percha." In about two years from that time she visited my office at the recommendation of a friend, when I found every gold filling in such condition that my friend, Dr. Dixon, would have thought proper to have them removed. I said to her that the mistake had been made of filling her teeth with *gold*, when they ought to have been filled with *gutta percha*; and, showing her the *poor molar*, said, "Do you see, this poorest of all the teeth has been filled with gutta-percha, and it is the only one that is not very defective."

Her eyes filled with tears as she told me the story of her four years' experience, and, as she finished, she asked what she should do. I suggested that she should call on and show the gentleman who did the gold work, the result of his labors. This proposition being declined with a show of considerable spirit, I then suggested that she should let the first gentleman replace the defective fillings with gutta-percha, as he had had the good judgment to do in the first place. She said that he was in Florida and would not be back until some months later, and then asked if I would fill them with gutta-percha. I did so; and some three years after (she had gone to the far West) I heard that all was comfortable and doing well.

Just \$200 for \$25 worth of work, as one practical experience of gold fillings in soft teeth!

Dr. S. has three daughters. The eldest had centrals and laterals filled with gold at nine years of age. These fillings failed and were renewed when she was eleven. Again they failed, and at thirteen and fourteen years of age they were severally renewed. Under these fillings the pulps died, and the teeth came to me for treatment. She has four discolored pulpless teeth.

The teeth (centrals and laterals) of the second daughter were filled when she was nine, with malleted fillings. At eleven they failed, when hand pressure fillings were introduced. These failed when she was between thirteen and fourteen, and gutta-percha fillings were then introduced. At sixteen these are good, and all the pulps are vital.

The centrals and laterals of the third daughter were filled with gutta-percha when she was nine. She is now twelve, and all the fillings are just as they were when introduced.

These are typical cases of my gutta-percha results. Now for amalgam.

Mr. D., the great umbrella manufacturer of our city, came to me in 1859 with a left upper molar. It had been pronounced unworthy of salvation, and he desired ether as an anæsthetic. I suggested that it would be a very great loss to him, and proposed treating it and building on an amalgam crown. This was done, and to-day he calls it his "veteran;" and it has enlisted many a new recruit into my army of teeth "not worth saving!"

Mr. C. W. came to me, in 1857, with no teeth to spare. He was in young middle life (twenty-seven or eight,) and had already lost many teeth. The tooth he came to have extracted was filled then with amalgam. He broke the crown off a *few weeks since*. I show it to you here. The roots have a full amalgam crown built on them now.

Since 1857 I have a list of a few over 500 patients who have come to me, having lost already what teeth they could comfortably spare; and from all these mouths, since that

time, *not one tooth has been extracted*. Can any of you do any better than that with your \$40 gold fillings?

Now I have here three teeth which I have brought you on the *discoloration* question. I would have brought more, but *unfortunately* the patients are eating on them! This one was in service 15 years; this one for 17 years; and this one for 22 years. Do you see that these teeth are *not one particle discolored*? These fillings are made of Townsend's Amalgam, which contains only tin and silver. When such fillings leak sufficiently the tooth becomes discolored,—just as teeth become discolored when gold fillings leak; but so long as they are tight, and in teeth of average quality as to structure, then discoloration is the *rare exception*, rather than the rule. I tell you, let an *average* operator introduce into one hundred *average* teeth fifty fillings of gold and fifty fillings of amalgam, and in ten years there will not only be more of the amalgam fillings doing good service, but among the fillings that are left there will be found more discoloration around the gold fillings than around those of amalgam. This is a startling statement, at least to some of you; but I assure you that I do not make it loosely, but as the result of long and careful watching—as the result of many years of patient observation.

Again, your ideas of amalgam are based almost exclusively upon its workings in the enormous cavities of almost completely abandoned teeth. You select teeth that you say are “worthy of nothing else.” Now, is this fair? For if amalgam will save such teeth *even doubtfully well and exceptionally*, is it not worthy a trial in some of the *moderately sized* cavities of teeth of *somewhat better structure*, where, even yet, gold *occasionally* fails?

It was said on one occasion, by my very good friend, Dr. Bogue, that he “viewed with admiration the pin-head cavities in centrals filled with amalgam by Dr. Clowes.” Now I have viewed, I *think*, a great deal more frequently with not so much admiration, the *enormous* cavities in cen-

trals which *had become so* (I say this advisedly) as the result of two or three consecutive gold fillings in each. For me, I would far rather have one of Dr. Clowes' "pin-head" amalgam fillings in one of my centrals, than to have one of those evidences of "first class ability," such as carried death to the pulps of both centrals and laterals of the young lady whose case I have related to you this evening.

Nor, gentlemen, is this any unusual story of "accepted" dentistry. Front teeth, *par excellence*, are filled and refilled with gold, as the *best* that can be done, until pulp after pulp dies, tooth after tooth becomes discolored and crumbles away, root after root is extracted, and plate after plate is inserted. This is *stereotyped practice*, and I defy contradiction of the statement.

Now, gentlemen, I want to tell you one thing more which has grown out of our long work on plastic fillings—that we have not come before you prepared for only a small struggle. We are ready for the fight. We have opened our batteries against the accepted dentistry of the day. We are an aggressive party, and we purpose *insisting* that our "basal principles" shall be thoroughly discussed. We purpose making it *respectable* that teeth shall be filled with materials which experience has shown to be able to save them; and we purpose making it *not respectable* to fill teeth with materials which experience proves daily to be "unequal to the emergency." We purpose that "seven dollars a year for one tooth" shall be regarded as too much by *dentists*, as well as by *patients*.

Gentlemen, I have brought up thirteen hundred patients from childhood; and from the whole thirteen hundred mouths but *five* permanent teeth have been extracted, and these five teeth I have as the trophies of my success—not to show that my "scalps" are many, but to glory that they are so few. I do not say this to you boastfully. I could not do that; for my heart is too full of earnest, deep-seated thankfulness that it has been given to me to go in that path which has led to so much comfort for so many of my fellow-

creatures. But I must plead guilty to a feeling of intensest satisfaction, as I think of the fact that every one of *mine* eats upon full unbroken arches, above and below !

Gentlemen, make a beginning with the teeth you would extract, and treat them. Make *that* dentistry ! Fill them with plastic fillings; and if, in twenty years, your experience shall have been that which mine has been, you will thank that great and excellent dentist, Elisha Townsend, as I thank him, for having had the hardihood to break the trammels of tradition and authority, in declaring that "teeth could be saved with amalgam which *he* could not save with gold."—*Dental and Oral Science Magazine.*

ARTICLE II.

Some Observations and Experiments Connected with Oral Electricity.

BY HENRY S. CHASE, D. D. S., M. D., ST. LOUIS, MO.

For the sake of simplicity I will speak of electrical action and galvanic action as one. Their slight differences need not be discussed. The electric current is always the same, however produced. To construct a battery, two substances must be used having different capacities for resisting decomposition. These two may be in close contact, or they may be separated and connected by another substance which will conduct a current of electricity.

If I tie together a piece of gold and a piece of tin, and put the same into weak nitric acid which will dissolve tin, I have a galvanic battery. The tin is acted upon and dissolved ; the gold is not acted upon at all, and the tin is dissolved *more* rapidly, and will lose *more* weight in a given time than it would if not united to the gold. The gold, then, may be said to *hasten* the destruction of the tin. If I unite the tin to *silver* instead of gold, the tin will not lose so much in the same given time as though united to gold. Now, although the tin and the silver are placed in the same

strength of acid as that of the tin and the gold, the silver will lose nothing when united to the tin, but if placed in the same acid by itself, it would lose more or less in weight. The silver here is saved at the expense of the tin.

Now I will take a copper wire (gold, silver, or other metal will answer,) two feet long, and fasten one end of the wire to the gold plate, and the other end to the tin plate, and put the two plates into the same acid, keeping the plates half an inch apart. I now cut the copper wire and attach the two cut ends to a galvanometer. The needle of the galvanometer *instantly* shows a deflection of, say 80 degrees. If I lift the *plates* out of the acid, the needle instantly returns to zero. This shows that an electrical current is instantly produced when the acid touches the *plates*. Now, I will use a silver plate instead of a gold one, with the tin plate, the needle instantly flies *towards* 80 degrees, but does not reach it, because the electrical current is not as powerful as that produced by gold and tin. Experiments prove that the most powerful current is produced by two different substances that are the farthest apart on the *electro chemical* scale. Let us take either gold, or platinum, or carbon, for one plate (or element) of the battery, because neither of these will be dissolved by a simple acid. Now we will take zinc or tin for the other plate (or element,) and now we have elements or plates which *are* far apart on *the scale*.

In making a scale of electrical power (potential scale) we place at the head those substances that are the most easily dissolved in acids. Let us make one from substances used as filling materials: Ox. chlo. zinc; Hill's stopping; tin; amalgams; gold. No current can be produced in the battery excepting at the *expense* of one of the *elements*. The stronger the current the more rapidly must one of the plates (elements) dissolve. Between ox. chl. zinc and gold, the current, therefore, would be the most powerful. Currents produced by the union of any two of the other elements would be far less powerful than between ox. chl. zinc and gold, if the conductivity of the zinc was better than it really

is. The *weakest* current would take place between ox. chl. zinc and Hill's stopping. Those elements which stand *close together* on the potential scale produce the *weakest* current. Consequently, If Hill's stopping and ox. chl. zinc be used as plates (elements) the weakest of all currents would be evolved. Between tin and amalgams there would be a weak current.

Now I will add another element to the potential scale which must imperatively have a place in oral electricity, and that is dentos or tooth substance. Between dental amalgams and gold there is a strong current, because they are far apart on the potential scale, although there is nothing that we use as a filling material standing *between* amalgams and gold.

Now, we must put next to the *top* of the potential scale DENTOS. Then it will read thus: Ox. chl. zinc, dentos, Hill's stopping, tin, amalgams, gold.

The two plates of a battery are called *elements*. That one which is the most easily dissolved in an acid is called the *positive* element. If the elements are tin and gold, tin is the positive element, and gold the negative one. Now, if tin and dentos are the elements, then dentos will be the positive one, and tin the negative. Tin, then, is negative to all above it on the potential scale, and positive to all below it. And the same is true of any and all of the other elements named in the scale. According to the principles of electrical science, dentos is positive to all substances except ox. chl. zinc, used for filling decayed teeth.

If tin suffers by being in contact with gold in the presence of an acid, the dentos would suffer much more, as it is higher on the potential scale. Hundreds of experiments prove that dentos *is* next to the top of the scale. The position of elements on the scale is determined by dissolving in acids. Experiments prove that dentos in contact with gold, in the presence of an acid, does lose more in weight in a given time than dentos does in contact with amalgams, tin, ox. chl. zinc, or Hill's stopping.

I have made many experiments with dentos and filling material, as follows: Ten (10) cubes of elephant's tusk (dentine) of equal density, size and weight, each having a cavity of the same size by drilling through the cube, were soaked in water one week, and then weighed. Each cube had its weight marked on its surface in *centigrams* (16 gr.) Two cubes were filled with gold foil; two were filled with tin and silver amalgam; two were filled with tin foil; two were filled with Hill's stopping; two were filled with ox. chl. zinc. These were placed in vinegar and water, and remained one week. At the end of that time the plugs were removed and the cubes alone weighed. Each cube had lost in weight as follows:

Ox. chl. zinc, cube lost	-	-	00 centigramme.
Hill's stopping, " "	-	-	1 "
Tin, " "	-	-	2 "
Amalgam, " "	-	-	3 "
Gold, " "	-	-	5 "

At another time the loss in weakened lemon juice was as follows:

Ox. chl. zinc, cube lost	-	-	1 centigramme.
Hill's stopping, " "	-	-	2 "
Tin, " "	-	-	3 "
Amalgam, " "	-	-	4 "
Gold, " "	-	-	6 "

Many similar experiments were tried with varying results, according to the size of the cubes and the acids employed, but in all cases the cubes containing gold lost a greater percentage than those containing other material. These experiments may be valuable in pointing out the relative safety of different substances united to *living* dentos, but they cannot be considered absolute. Living dentos may have *some* power to protect itself from galvanic action, but I think it must be slight in the case where galvanic action only takes place (in a *water-tight* plug,) just at the *margin* of the fillings, where it would be least likely to receive nutrition. Where a plug admits saliva between itself and dentos, galvanic action takes place at every point of contact between

the plug and the former whenever the admitted fluid becomes acidulous. In much of the dentos here, the power of self-protection may be something more than theoretical. At a certain point of acidity it must succumb to the attack-force, as may be seen by knowing that decay or chemical dissolution of dentos is continually taking place in the mouth. Whatever power of self-protection sound and living dentos has, its weakness in this respect is that which has created the dental profession.

The following experiment may be interesting: Take two polished plates of soft steel, precisely alike, each having three holes exactly the same size. The holes in one plate are plugged with gold foil; the holes in the other plate are plugged with tin foil. Place them in a dish of river water; the latter barely wets the top surface of the plates. At the end of one hour the plate having *gold* in it will be *covered with rust* on its top surface; the plate with *tin* will not be at all rusted.

The conductivity of our filling materials have the following order: Gold conducts electricity the best; tin next; amalgam; Hill's stopping. I place gold at 60; tin, 30; amalgams, 10; Hill's stopping, 3. The conductivity of these substances has been *determined by experiment*.

Conductivity is an important factor in the galvanic action of dental plugs. This is why a water-tight amalgam plug is better than a water-tight tin foil plug *in acid conditions of the mouth*; the latter being a better conductor.

I deduce from these experiments that every plugged tooth is a complete galvanic battery ready for action when the necessary stimulant (acids) is applied.

That Hill's stopping will arrest decay a long time better than gold in certain conditions of the mouth. That ox. chl. zinc will arrest decay *perfectly* for a very *short time*, as it is itself destroyed too rapidly.

That tin foil is superior to gold for arresting decay a *limited* time in acid conditions determined by its progress in cupping on the surface.

That amalgams which do not *leak* arrest decay better than gold or tin in acid conditions.

That gold is the *worst* arrestor of decay in acid conditions, whether with a tight or leaky plug—though far worse if leaky.

That a water tight gold plug arrests decay as well as any other material when the contents of the mouth are *not acidulous*.

That a water-tight plug of one material is as good as another for arresting decay in a *neutral* condition of the oral fluids, so long as its *form* is not changed by natural attrition or accident.

That in acid conditions a filling material which is a *bad conductor* of electricity will arrest decay better than one that is a superior conductor.

That for this reason a gutta percha filling arrests decay in a remarkable manner, and that when a water-tight plug is made with it, there is nothing superior as long as it retains its integrity of mass.—*Dental Quarterly*.

ARTICLE III.

Address before Alumni Association of Baltimore College of Dental Surgery.

BY S. J. COCKEBILL, D. D. S., PRESIDENT.

GENTLEMEN OF THE ALUMNI ASSOCIATION:

In the vast domain of science and art, many subjects arise to attract us on such an occasion as this. The teachings we have received of our Alma Mater and the books we should take a pride in studying, have proved sources of gaining knowledge in *all* departments of learning, more accurate and lucid than could be contained in this form of address. Such an address to be acceptable, we are aware, should be presented in thought and language brilliant and glowing, and with all the beauties and intensity of elo-

quence. We have no such ambitious motive. Ours is *only* an earnest and determined effort to give fresh and vigorous impulse to the minds of our fellows in search after knowledge. In the effort to accomplish this, we must claim much from your indulgence.

The avocations of professional life afford but few leisure hours for literary pursuits. We indulge the hope that, not merit but the sincerity with which we offer this tribute of homage at the shrine of Alma Mater and our beloved profession, will commend approval.

A philosopher would tell us, that no art or science should be allowed pre-eminence, but the close observer of human nature must admit that the science or art, which is eagerly pursued for years, will appear of paramount importance. To prevent this is almost as difficult as passing through the eye of a needle. Some of our brethren have tried to convince us that this is an error. They tell us to rend asunder our Alma Mater and her sister institutions, and bury our glorious profession in oblivion. These brethren in their efforts to prove to the world they are truthful and honest, remind us of the atheist, who in his determination to be honest, and in his melancholy does not realize the fact he is praying to God. Thank God that these gentlemen though denying it themselves are praying for the success and prosperity of the profession. The hard study and actual physical labor necessary to perfect them in the profession dishearten and discourage them. With the average man it requires thirty years of hard work to become a perfect dentist—if it is ever done—but few will ever attain excellence.

We should guard against falling into the selfish, sordid, money-loving man, who follows the profession with ambition only for the half-dollar, and to keep a well stocked larder. The higher and nobler aims of the true artist and the man of science never enter the soul of such a creature. He forgets that the love of money is the root of all evil, and like

"The sluggish owl that courts the night,
Might check the eagle in his sun-ward flight,
And think because to him it is not given
No nobler bird can face the light of Heaven."

The money-lover is a curse to himself, a blot upon professional life, and may we not add, one of the most contemptible of God's creatures.

Anatomy, physiology, materia medica, pathology, metallurgy, botany and chemistry are accessory sciences to dentistry. The *Dentist* must acquire these sciences, and yet the acquisition of them all does not make the dentist. The dentist must educate the hand, ay, he must rise still higher, he must educate the heart.

The limited powers of the human mind have made it necessary to make a division of the sciences. Dentistry stands second to none other. What then is necessary to fully develop its importance, its dignity, its superiority to other branches of science? Our duty is not only to prepare ourselves for the profession, but to lend our best abilities and energies in inducing those who are yet to enter the ranks, to come thoroughly prepared.

How shall this be done? We who have studied anatomy, physiology and disease, know we constantly encounter names of Latin and Greek origin, therefore an understanding of these two languages should always precede the study of dentistry.

The study of dentistry is most favorable to the development of the mind and understanding, and to the refinement of the views of men. It does more to quicken the mind and elevate the soul than any other study.

How can we accomplish the greatest good to the profession? The answer is plain. Receive no student in our private offices who has not received a proper literary education, and discourage all from entering the profession who do not approach her portals thus armed. Just here allow us to say, we well know that nothing can supply the place of brains and character. We understand the difference

between men; one can accomplish more with an excavator and plugger, than another can do with best and most improved set of instruments. We believe in that education *only* which teaches how to think, aye, we should have said how to work,—in that mental and physical training which produces the greatest possible developments.

Let students come to Alma Mater prepared for toil and research. Let students come impressed with the idea and belief that *they must* contribute to the advancement of the profession, and that a high and sure reward awaits them. Teach them to fulfill a bright destiny in some department of excellence, and the plaudits of a grateful profession will hail them as benefactors. Bring to our ranks genius combined with literary attainments. Teach them to devote themselves to literary pursuits as a professional duty.

The profession needs the soul-stirring, life-pervading influence of literary men. She cannot float safely by the side of her sister professions, and on the stream of progress upon which we would have her launch, without learning and science at the helm. The professional mind must be sharpened by collision. Let not our students be unprepared for this collision. The study and practice of dentistry incite the mind to intense activity. It is our duty to direct the younger minds to purposes of good, and not allow them to be perverted to mischief. Teach them to make their motto "upward and onward." The profession demands that we bring into her ranks educated genits, that truth may be discovered and fallacy detected. We must have varied learning, cultivated taste and high moral courage to attack and refute sophisms that may at any time endanger our onward and upward course.

Be governed by these principles and the future of dentistry will be better, brighter, nobler and higher as time goes on. If we will be determined, wise and true to ourselves, clinging to and laboring for the profession as she deserves, the day is not far distant when other professions and the public will look with admiring gaze to her beauti-

ful, queenly and towering form, dispensing good to every body, preserving the health and beauty of all. To be wise is to be invulnerable.

Bring to the profession those, who by the light of their own genius will explore the heights beyond us. Truth must not be trodden under foot by careless observation and self-assertion. The annals of scientific research prove positively that the only way to keep comparatively free from errors, is to have accurate and pains taking observers and experimenters. Nothing short of educated genius will meet the needs of the profession and satisfy the seekers after truth.

Work is not noble from its results. It is work *itself* and the spirit in which it is done that constitute true nobility. True happiness is the wages of labor. Work and toil bring in view new truths which heretofore have been unsuspected. There is a dignity, a sense of relation between mental and physical labor in dentistry entirely wanting in other pursuits. Let students come to Alma Mater educated to work, so that they can concentrate the mind to the greatest advantage, and fix a separate and independent attention upon each particular branch of the profession. An educated trained mind sees things as they *are*, not as they are *supposed to be*. Every addition of a man of genius and learning to our ranks extends the limits of our dominions.

The pursuit of learning is noble and well worthy any amount of labor and toil. If prosecuted with ardor it rewards itself. It affords the highest pleasure, delight and gratification, that the mind can enjoy. Increase of appetite grows by what it feeds on. Her ways are ways of pleasantness and all her paths are peace.

It is the belief of the ignorant that a man to be eminent must confine his mind to one subject. The mind to be fully developed should be directed to every branch of art and science.

Our ranks must not be recruited from that class who obscure truth with careless observation; who are satisfied with unfaithful work; who in their laziness substitute

inference for observation ; who substitute falsehood for fact ; who believe in words, not works ; who will draw us into errors and confusion ; who will exert a baneful influence upon our art and science : who pursue novelty and fancy.

Dentistry demands that her ranks be filled with educated genius, matchless skill, strong and determined will ; an humble estimate of one's self ; hatred of assumption and presumption ; an anxious love of truth ; with men who are determined to do their duty, and are not afraid of work and toil ; with men who ever remember that he who acts as *duty* calls, shall *live*, though dead.

ARTICLE IV.

Is the Dental Profession Crowded ?

BY PROF. HODGKIN.

The young man who contemplates entering the ranks of the profession of Dentistry may very seriously ask this question. Of course the ready answer is the old one, "Not in the upper stories." But is it now, really ? And really to look at the multitude of signs bearing the title of "Dentist," and ranging all the way from the modest and unobtrusive door plate to the blazoned beacon which in letters of big gilt heralds the shop of the "gas man," which are seen in our cities and adorn our avenues, one might well ask, is the profession crowded ?

Comparison may help us. Prof. Pepper, of the Pennsylvania University, Medical Department, in an address at the opening of the last session of that school, gives some interesting statistics to show the abundance of Doctors of Medicine. Here, in the United States, we have one doctor to every 600 souls ; in France, one to every 1814 souls ; in Great Britain, one to every 1672 souls : in Germany, one to every 3000 souls ; in Austria, one to every 2500 souls. That is to say in Europe there is about one medical man to

every 2250 of population, or about one fourth the number that "prevail" in this free country, where anybody who wants to be a doctor can be one if he can purchase the tickets. Moreover in those embarrassing countries of Europe only about 900 a year of new doctors are made, while in this new world we turn out 3000 annually.

We are strongly tempted to go on and write something harsh about our medical relatives, for certainly the opportunity offers; but we are hardly safe to throw stones, living in these houses of glass of ours, and besides the theme will keep. It is hard to get at the number of dentists in the United States. The total is roughly estimated at about 10,000, which would be about one to every 4500 of the population. This is a large number for any dentist to have the care of and would be with difficulty attended to, but we must remember two facts: first, that this number embraces the infantile population, and half of these perish long before they are the subjects of the dentist's science, passing away before the age of six years, and only requiring his help for the occasional extraction of an aching deciduous tooth.

How many of the 2200 and odd, that get their permanent teeth, are what might be called patients? We may safely say that one half of these are only subjects for extraction, not filling, and their subsequent assignment to the dental mechanician, excludes them from classification with those we may fairly call patients. So that after all we will have hardly a thousand apiece left. Of this one thousand, how many are really patients in the sense in which we would delight to use the word? Not many. A few visit the office regularly to see if anything is wrong; a large number postpone the day of their coming until driven by pain; a blessed, very few don't need us at all,—and really we have not got many left to operate for. Of these, the men who by talent, or cheek, or fortuitous circumstance get in the front, obtain control of the large number, and what is left is scarcely sufficient to keep the rest in life's needs.

But the profession is only *seemingly* crowded. We who teach in the schools, know this; we know that the classes

who sit winter by winter to hear the lectures, contain many men who will not be at all in the way of any earnest man.

For our part we love to teach, or try to teach these young men. They are very attentive, respectful auditors. That they do not learn dentistry is the fault of—whom? Given the facilities, lectures, demonstrations, access to the anatomical and pathological curiosity shops, free scope among the poor wretches who flock to the Infirmaries,—with all these, one in every ten or twenty is a success in after life.

They fail to do well for themselves or their patients, they damage their profession in the eyes of its kindred callings, they are cripples in a race with the few strong and swift.

Primarily, the fault is with those who take students, not with the colleges. The dentist who finds his mechanical work crowding him, takes a young man; or boy perhaps, and puts him in his laboratory. He, (the dentist) seldom has more in his mind than that he wants help and must get it cheaply. He pays the boy nothing, but usually gets a few hundreds of dollars from him. The student contracts to stay for no special length of time, and probably sets up for himself in a year or two. But the worst feature is, that as a rule no standard of qualifications is exacted, whether the student can read or write, whether he be boor or gentleman, matters not, so he can grind teeth and polish plates.

But the whole subject is too familiar for repetition. If dentists would take only such students as are qualified by nature and training, such students as possess a good education, such as is obtained in our grammar schools at least; and if they would give them a chance to *study*,—not the temperature at which rubber is most readily hardened, but study their profession at the chair side, and if they would see that this was done for at least three years, and then see that they attended college lectures two years, a different state of affairs would be had, and perhaps the profession would begin to be crowded with men who could fairly compete with the ablest. But to any young man who will first

fill his mind with knowledge, as he can best obtain it in some literary institution, and then study dentistry for at least five years, following that course with a graduation at a *good* medical school, and then start out, he will not be likely to find the position he takes in the profession he has chosen, at all crowded.

We have written this in vain if the reader does not gather from it that the felt wants of dentistry are preliminary training of a general sort, and abundant special training of a special sort. In a word, that the trouble is not that there are too many dentists, so much as that the many have no adequate training to fit them for their chosen profession. The remedy for this lies mainly with the profession, not with the colleges. These are constantly having forced on them students whose capacities might perhaps be developed by years, but which cannot certainly be brought out in the few months of training in the dental schools. If preceptors will take no students except such as are possessed of a fair share of mental training, and will keep them by them until they know something, and then see to it that they attend two full courses at a dental college, we shall see a different state of affairs very soon.

ARTICLE V.

Professional Hobbyism.

BY HENRY E. BEACH, D. D. S.,

Ex-President of the Tennessee State Dental Association.

MR. PRESIDENT, AND GENTLEMEN OF THE VIRGINIA STATE
DENTAL ASSOCIATION:

It was my intention to have been with you at your meeting in Richmond, but as I find that circumstances will make it impossible, I send you instead, a paper, which I trust you may not find uninteresting. I select for my theme—

PROFESSIONAL HOBBYISM.

It is a fact too commonly observed among all professions that extremists arise, who pursue their hobbies with one idea so constantly before them as to shut out from their vision all else. They shoot off into some pet scheme of their own, or if not sufficiently original, into the scheme of some one else's, crying "Eureka; I have found the highway to perfection." We see such often, as we see meteors darting along the horizon for an instant, shining, but suddenly disappearing, leaving only a light streak to denote their late track. Like the meteor he is gone forever, unless he as suddenly discovers another "Pearl of great price."

To leave metaphor and be more practical: The advocates of gold as the only fit material for filling teeth, plant themselves on this precious metal, and shout aloud on every occasion, whether appropriate or not; "Away with tin, away with amalgam, I can fill any tooth with gold that can be filled at all." Any material other than the yellow metal is as revolting to their sensibilities as cannibalism, and should not be tolerated for a single instant. They thus make a hobby of the most desirable of all materials for filling teeth. While common sense and the observation which nature furnished them,—but which they have never rightly used—should have taught them that these less costly and in many cases, less desirable materials, have their place in the catalogue of useful and desirable fillings, and without them many thousands of teeth that are now doing good service would be monuments of the skill of the cheap dentist who makes "extracting" and "rubber" a specialty, and who sees no help for a tooth which "has a hole in it."

Sub-dividing this golden subject, arises the *cohesive* dentist, who describes his methods in long articles, giving all the minutest details, from the preparation of the cavity to the final polishing touch, which description would be excellent, did it not begin, continue and end in the arrogant assertion that "if others will learn of *me*, follow *my* advice in detail, regardless of any contra-indications which may be

present, there will be no more failures, no rat-holes, no checked enamel from heavy malleting, no giving away of cervical walls of proximal cavities, but all will glide smoothly on, and the work endure to the end of time, as a monument of the skill and good sense of the distinguished operator."

Another sub-division of the golden field is worked by the exclusively *non-cohesive* advocate; he who uses nothing but Abbey's Soft Foil No. 4, and never makes a failure. He has a peculiar way, all his own, of tucking it under and working it in, so as to combine all the good there is in gold in any method. *He* would not suffer any other than non-cohesive gold to come near his office, and with all the egotism of a hobby-rider he cries aloud: "come unto me all ye dentists and learn wisdom that will give you success through life, and leave you a crown of laurels when you pass away."

Tin has its advocates. So has Amalgam, Oxy-chloride of Zinc, Wood's Metal, Gutta-percha, &c. Mechanical Dentistry too is by no means free from its hobbies. But I forbear to detail. All these egotists and exclusivists seem to forget or to ignore the great principle that underlies success in any avocation in life: that there must be a proper adaptation of means to ends. We should never forget that "intelligent diagnosis must precede manipulation."

It may seem a bold assertion to make, but it is nevertheless a self-evident fact, that he who has a stereotyped rule by which he is governed, regardless of idiosyncrasies, temperament, &c., is a quack in the broadest sense of the word, and can no more fill the requirements of the dental profession, than a butcher can perform an operation in staphyloraphy. Then let us unshackle our minds, divest ourselves of every hobby, and look well to our diagnosis, and carefully make up our minds as to the prognosis, before we venture even to suggest what is best to be done in the premises.

To do this, many things are to be considered. We must consult the general health, idiosyncrasies, if any, the age and

temperament, the character of the secretions, and occult sources of disease calculated to effect them ; habits of cleanliness, the character of the operation and of the organs to be operated upon: on each one of which subjects I would like to speak of separately, if time would permit, but I can not. When we have done this why not divest ourselves of all pet theories, and take a conservative view of the situation, then if the case is one demanding a gold filling, is a gingival or crown cavity, with strong walls, fill with non-cohesive cylinders ; or if a compound proximal cavity in the molars or bicuspidæ, use cylinders at the cervix or until nearly full and finish with cohesive gold, and if a compound complicated cavity in any tooth, fill with cohesive alone, retaining with screws if necessary, and thus get the best results by an intelligent adaptation of the different preparations of gold, all of which are good in their place. If the case, owing to the class of teeth, demands tin, hesitate not to use it with much confidence, for in many instances, it surpasses anything known as a filling. Many teeth can be saved with it, when gold would positively hasten their destruction. Amalgam though much abused has its place too. In badly decayed molars, and out of the way places, where you are unable to use anything else durable, or your patient is not able to pay for large contour gold fillings, nothing is so good as amalgam. As it is in operative dentistry so it is in mechanical, but gentlemen, we need all the different appliances in mechanical dentistry known to us, and should discard none of them. Gold, platina, rubber and celluloid all come in at their proper place, and our duty is to know where that place is. The intelligent farmer would laugh at the idea of preparing his soil for different crops in the same way, or planting all kinds of seed on the same quality of soil, yet there are men in our profession who are doing practically this very thing, and the sooner we stop such a practice, the better it will be for us and those who need our services. Then let us be careful that we nurture no pet theory to the exclusion of truth and light but by a

rational system of eclecticisin exclude, combine and discriminate, and thus accomplish the end of our mission, the preservation of the teeth of our patients. I believe there are men now practising dentistry who would rather lose the teeth of their patients through gold, than save them by the use of amalgam, just as there are men who have tried to work for years after their sight began to fail without glasses, fearing to confess that they could not see, though betraying their defective vision at every turn. They see their failures, but professional hobbyism will not let them confess their errors, until in time the truth itself seems error, and error assumes the guise of truth.

ARTICLE VI.

Substance of Lectures on Gold.

BY PROFESSOR HODGKIN.

We have spent sufficient time over the details of mining to have become somewhat familiar with the processes employed, and this evening are prepared to proceed to what to us, is a most important division—the *refining* of the metal, and its separation from its metallic associations. We will bear in mind the fact already mentioned, that in dealing with gold we do not meet with natural combinations—any chlorides or oxides of gold we may have to deal with are formed artificially by us by the aid of chemicals, and are not to be met with in a natural form. But we saw what to the metallurgist is of great importance, that certain other metals, some of them noble, and others not belonging to that class, were associated with the gold, and were alloyed with it, and as it is of the utmost importance to us that the gold we deal with should be *pure*, it is a grave question with us how we shall obtain that purity without which the yellow metal is useless. To illustrate how exceedingly important it is that the baser metals, if any, should be thoroughly

removed, it is stated that two grains of lead, or one half a grain of antimony will render one thousand grains of gold unmalleable. No work therefore is more exact, and no processes in metallurgy must be conducted with greater nicety than that of refining gold ; so that if we spend some little time over it you will understand that it is because of the precision required. But lest some should say beforehand that it is too complex a study for students not far advanced in this branch of research, I will state that there is but one quality necessary on your part—that of close attention. A great man has said that the main difference between minds is that of attention,—the ability to give perfect, full attention to a subject, constituting in his judgment the disparity between the weak and the strong. If this be true, and I am much inclined to believe in the doctrine, it is only necessary for us to give our minds fully to this or any other subject in order that we may thoroughly understand it. And certainly in this branch of chemistry we will find it plain sailing, if we fix a few cardinal facts in our minds, and study a few simple chemical laws, and their action.

The books on metallurgy make much use of a term which at first seemed to us may be puzzling—the *discrimination* of gold. It means, in my plain definition, the processes for deciding, (1) what is gold, and, (2) how much gold is in a certain mass of alloy, or ore.

And first as to what is gold. This is a most interesting question, as mistakes have been and are frequently made by persons not experts in metallurgy, such errors sometimes being of a grave character and involving immense loss, and occasionally of a ludicrous nature. Several different mineral substances have somewhat the lustre and appearance of the precious metal. *Mica* in small scales glistens as we see it scattered among the sand of the highway, and its glitter is sometimes mistaken for gold. A magnifying glass will easily enable one to discern the difference—the peculiar translucent scales of the mica showing plainly under an

ordinary hand-glass. *Iron Pyrites*, (ferrous sulphide) containing one atom of iron and two of sulphur, has still more frequently been mistaken for gold. Its peculiar crystallization will enable us to discriminate this mineral and place it in its proper class. The blow-pipe, that invaluable and indispensable companion to the metallurgist, will readily reduce the iron, which gives off sulphur vapors, and by the application of a magnet we have a ready and certain test of its nature. It is worth while, in passing, to say that this iron pyrites, although a nearly valueless ore, so far as its iron is concerned, is of considerable value for another purpose in the arts, as from it is made most of the ferrous sulphate or copperas of commerce, as well as sulphuric acid, and also a considerable amount of sulphur and alum.

As these are the minerals we are most likely to mistake for gold, I will leave the qualitatIVES and pass on to the quantitative discrimination, and only pause to say that in the office of the assayer the nicest tests are required and made use of in this most interesting branch of metallurgy, as it is of the greatest importance to know whether it will pay to separate the gold from the mass of other materials with which it is mingled, or to extract it from the metals with which it is alloyed; in other words to determine the amount of gold present in the mass we are to examine. The assaying of gold ores does not concern us specially, but it is interesting to be able to estimate the amount of gold in alloys, as most of that which we are likely to handle is of this character.

The old method of the "touch-stone" was a fair approximate test of the value of gold alloys, and though only approximate was much depended on before the more modern and exact processes now employed. To practice this method it was necessary to have a sample of gold of known value, and several grades were kept for this purpose, drawn into large wire, or hammered into pieces called "needles." These ranged from fine gold by half carats down to eighteen, or lower still if desired. Thus the first would be 24c, the second 23½c, &c.

“The touch-stone itself is simply a hard piece of basaltic rock, with a surface sufficiently hard to abrade the metal and retain upon its surface enough of the piece to be tested for examination by acid.” Nitric acid is used for this purpose. The test-bars are rubbed on the stone, leaving their mark, and the alloy to be tested is similarly treated. If the action of the acid upon the piece of *unknown* quality is the same as upon that which is *known*, we have an approximate test of the value of the specimen we are experimenting upon. The acid develops a green color on coming in contact with the alloying metals, while the gold is of course untouched. This method will be seen to be rude and uncertain, yet it is useful in some cases, as it has the merit of being easily applied, and is sufficiently accurate for much of the testing we would require. Much depends upon the judgment. It will be observed also that it leaves us without knowledge of the character of the alloying metals, a point of great importance, as we will see further on.

Far more accurate methods, involving great precision of manipulation and exact results are described in the works on metallurgy, but they involve costly and, to us nearly useless apparatus; and the methods are almost too complex and require too accurate a knowledge of the finer arts, to say nothing of the science of assaying, to be of practical use to us. But a very simple method for determining the amount of gold in a given case would be to take say one part of the alloy to be tested for gold, and two or three parts of silver and about seven of lead. This is “cupelled,” as it is termed. (The word and the method are very old, and the process one of great beauty and simplicity. A cupel is literally a “little cup,” and in this case is a crucible made of bone-ash, dampened and stamped into a steel mould. The operation is founded on the well-known property of characterizing the precious metals, viz., that when heated to fusion and exposed to a current of air they do not oxydize, while the base metals associated with them and undergoing similar treatment do oxydize. By this simple means we are enabled to be rid of the impure metals. The unoxydizable metals require different treatment.) On applying the blast of the blow-pipe to our lit-

the assay the whole mass is fused, and the lead, carrying with it any other oxydizable metals which may be present, is absorbed into the cupel. The gold and silver are parted by Aqua Regia, and the gold precipitated and weighed.

Of the gold which falls into the hands of the dental mechanician, only that which is in the form of foil is pure, and even some foils are slightly alloyed to destroy or lessen their cohesiveness. Gold coins are alloyed definitely as to quantity, and with some at least definitely as to quality. The gold plate for sale in the depots should be of known valuation, and probably is in many cases; while the old gold plates which come to us as dentists for repair, or are purchased as old material, are of course unknown, unless made by ourselves. Of these it may be said that the solder contains always considerable copper and silver, and occasionally possibly zinc, while the platinum pins in the backings further complicate the question of refining the mass.

It is not however impossible, nor even greatly difficult for us not only to comprehend the processes by which gold may be refined, but if we will give the subject a little careful study, and our manipulation of the several processes that intelligent care which as dentists we should bring to bear on all the studies we engage in, and all the work we perform, we will find that the difficulties of this subject, which classes are usually shy of, will vanish, and I shall get as intelligent answers from you as students on the subject of "refining gold" as on the familiar one of Vulcanite.

[TO BE CONTINUED.]

ARTICLE VII.

Inquiries Concerning Anæsthetics.

At its last meeting the British Medical Association appointed a committee to make further studies on anæsthesia, especially with regard to the relative merits of chloroform, ether and bichloride of methylene. The last mentioned, by the by, is preferred to either of the former by Mr. F. Spencer Wells and other eminent British surgeons.

Such committees are much needed, for there are a great many points about anæsthetics not yet satisfactorily settled. Some of them are of great medico legal importance, and considering how intimately they concern medical men, even to the extent of putting their personal and professional reputation in peril every time they administer an anæsthetic to a female without competent and truthful witnesses standing by, it is extraordinary that greater attention has not been given them.

Quite lately a medical man in England was arrested and imprisoned on the charge of a married woman that he had violated her after giving her chloroform to extract a tooth. She claimed that though wholly speechless and powerless, from the anæsthetic, and therefore unable to resist, her mind was quite awake and she knew everything that took place. A gentleman on the trial deposed to a similar occurrence in the experience of a friend.

Here, therefore, is a question we would ask, and one obviously of vital importance. If this condition of complete consciousness does at times coexist with complete motor and sensory anæsthesia, of course the plea of inagination offered in such cases as the usual defence falls to the ground. For our own part, we have administered both chloroform and ether very frequently, but never knew an instance when the patient was so completely under the influence of the agent that he felt no pain, in which consciousness or memory remained active.

Again, there is the old inquiry as to whether a person in sleep can be anæsthetized.

The latest thorough study of these and kindred questions which we have seen is by Professor R. M. Denig, in the *Ohio Medical Record*, January, 1877 (given in the *Half-Yearly Compendium*, July, 1877.) His general conclusions are that chloroform cannot be used successfully for felonious purposes, and that a person in the anæsthetic state is not a competent witness, which conclusions we believe to be correct.

In regard to ether, there are some inquiries of a different character worthy of attention. We were recently asked by a very observant surgeon whether cases were recorded where a single administration of ether left behind it permanent impairment of the digestive and nervous systems, extending over years. He narrated one such case in his own experience, in the person of a strong and healthy young man, who took the anæsthetic for a trifling operation. Such an instance was known to us, but the subject was a hysterical woman, and we never felt sure how many of her symptoms were imaginary.

More than one death from ether have been lately recorded. Mr. Robert Saundly, of Birmingham, gives the following typical instance in the *London Medical Press and Circular*:—

M. C., aged 35, was admitted for contracted knees. On October 4th, at 12.45 P. M., I administered ether with Ormsby's apparatus; it appeared to me a very favorable case; very little of the anæsthetic was used; there were no alarming incidents; very little stertor or cyanosis; no vomiting; no obstruction to respiration, which was throughout regular and full. After Mr. Bartleet had straightened the limbs, some time was consumed in adjusting splints, during which time no ether was given; and, as there appeared to be absolutely nothing to call for any notice at the time, I watched her with the utmost satisfaction, and allowed her to be carried out of the theatre without arousing her from the sleep into which she had fallen. She was removed on a stretcher, and was well wrapped up, but, to reach her ward, was carried about fifty yards across the open court, the day being fine. After being placed in bed, she roused and spoke to the nurse, who noticed nothing unusual about her. At 2.15, about one hour and a half after her return to the ward, she became suddenly alarmingly ill, and when seen by the house physician (in the absence of the house surgeon) she was cyanotic and pulseless, with *rales* all over the thorax. All attempts to rally her were fruitless, and she died at 4.15 the same afternoon.

The post-mortem examination, made the following day, showed some œdema of the membranes of the brain; no thrombosis of the pulmonary artery; heart healthy, containing a little blood in the right auricle; ventricles contracted; lungs pale and œdematous; other organs healthy.

There seems to be no doubt that the deceased completely recovered from the ether narcosis, but died from œdema of the lungs, which supervened one hour and a half after her removal from the theatre.

Whatever the immediate pathological cause of death here, it is to the ether-narcosis that that condition is to be attributed. It illustrates that too confident reliance on ether as a harmless agent is both unfounded and dangerous.—*Editorial in Med. and Surg. Reporter.*

EDITORIAL, ETC.

Specialism.—Drs. W. H. Atkinson, of New York, and J. E. Garretson, of Philadelphia, have lately issued a card, inviting correspondence from those interested in the formation of a Society of Oral Surgeons, "the object of which is the cultivation of the science and practice of oral surgery as a specialty in medicine." The card further states that "as the attainments necessary to fitness for the practice of such a specialty belong both to medicine and dentistry, the invitation is to those possessed of both qualifications." A meeting is proposed in New York City after responses to this call are received and considered.

We suppose this card to mean a Society of rather an exclusive sort, as it limits its membership to those holding medical as well as dental diplomas; though whether it is so worded in order to keep out the M. D's, or to exclude the simple D. D. S's, it does not appear. Why a man of attainments sufficient to practice dentistry as it should be practised, should be excluded from such an organization, we cannot really see; nor can we, considering the present ease with which medical diplomas are obtained all over the land, see why the addition of M. D. to his titles should give him consideration. If a "dental diploma is a sham," as the *Canada Dental Journal* says, the medical diploma is much more of a sham, and of itself is significant of nothing, save that the holder, perhaps, paid certain fees and possibly heard some lectures.

By all means form any Society which will give tone to the dental profession, and if you wish to do so, include in your practice as you certainly have the right, all operations in the oral cavity. But do not publish to the world a statement or an implication of a statement which is simply absurd: that of those now practicing dentistry, none are qualified to aid in organizing such a society as this card calls for, unless they can append the mystic M. D. to their names.

But there are hopes of the medical profession. Prof. Green, of Pennsylvania, in an address in New York, before the "American Academy of Medicine," represents an organization which has for its object the "bringing of those who are alumni of both classical (or scientific) and medical schools into closer relations with each other." The purpose for which this Society is formed is "to encourage young men to pursue regular courses of study in classical and scientific institutions before entering upon the study of medicine, and to extend the bounds of medical science and elevate the profession." The constitution further prescribes that fellows of the Academy shall be alumni of respectable institutions of learning, having taken the degrees of A. B. and A. M., in addition to or preliminary to the degree of M. D., and requires the candidate to study three years to get this last degree. Some unimportant exceptions are made to allow for equivalent preliminary training. How long it will take to lift the profession of medicine out of the slough into which it is

fallen by such means it is hard to say, but we are glad that there are men willing to take steps which tend that way; it is full time. We hope to say more on this subject hereafter, and shall watch the "American Academy of Medicine" with curious interest.

Write It.—Why not? You know facts in your practice that are of use to you, which you have reason to think the public are not generally familiar with. You are studying hard, are a close observer, and are original to some extent at least in your methods of work. Pathological anomalies and surgical cases occasionally fall under your observation, and you are certain that your individuality has struck out a path which has led to good results. Write this out, friend, and send it to the JOURNAL. If you cannot give it that graceful shape and elegant style which characterizes the better productions of the day, put it down anyhow. If, as a friend said a few days ago, you cannot "make it elegant and have it strong, too," let us have the facts. The editors are willing, (so industrious souls are they,) to rewrite anything that has good solid *facts* in it, if you will only give those facts. We will try and put it in shape if need be. So write it.

Elsewhere is mention made of a pamphlet by Prof. Donaldson, and in that notice we took occasion to invite correspondence on the subject of *Southern Light*, and its influence on the health of the dentist. We will be glad to hear from all who have moved their offices to the *south side* of the house, and who feel that the change has helped them. The health of the dentist is an exceedingly important subject, and if there is advantage in the position let us find out all about it.

BIBLIOGRAPHICAL.

House Air—the Cause and Promotor of Disease.—A pamphlet by Frank Donaldson, M. D., Professor of Physiology and Hygiene, Maryland University, School of Medicine.

An interesting and able exposition of the injurious effects of confined air on health. Dr. Donaldson shows in this paper many facts, which, while we are all more or less familiar with, yet cannot be too often brought before the public. To dentists especially is the subject one of importance, as the ill health they so often suffer is undoubtedly due in many cases to the want of proper ventilation. It is bad enough to stand in a constrained posture with all the attention on the stretch and every muscle and nerve in tension; but to breathe, as many do, the confined air of the office, and add to that the inhalation hour after hour of the breath of our patients, is not slow but rapid poisoning. Some one ought to invent a contrivance by which a gentle circulation, without draft enough to cause annoyance, could be kept up around the dental chair. Dr. Donaldson's paper touches on the sunshine question also, and shows that it is directly promotive of health. It is probable from the few observations we have been able to make, that not a few dentists have of late moved their chairs to the south side of the house. We would be glad to know how many have of late been influenced by the discussions of the light question, and solicit communications.

MONTHLY SUMMARY.

Carbonic Acid Gas Baths, are used at *Vichy*, for gout, rheumatism, neuralgia, &c., and for uterine troubles, with success. The administration by the stomach does not seem to be successful.

Relation to Life of Aerostatic Pressure.—The notion that the fatal effects experienced from exposure to a highly rarefied atmosphere is caused by the diminished pressure, is disputed by Prof. Paul Bert, of Paris, in an essay which has been awarded the great prize, issued every two years by the Institute of France. By an ingenious series of experiments, Prof. Bert shows that when a bird, placed under a bell-glass from which the air is gradually exhausted, it may be immediately restored by the addition of a little pure oxygen to the highly rarefied medium; while by continuing the action of the air-pump, as well as the admission of oxygen, the rarefaction may be kept at a standard supposed to be sufficient to cause death, without resulting in serious inconvenience to the animal. After having experimented upon various animals, Prof. Bert placed himself within a large cylinder, with the nozzle of an oxygen bag in his hand, and caused the air to be slowly exhausted. At the expiration of twenty one minutes, with a barometrical pressure of 590 millimetres, his pulse was 70. At the expiration of thirty-five minutes, with a pressure equivalent to that of 13,000 feet above the sea-level, his pulse was 84 and a feeling of nausea nearly overcame him. Two minutes later the nausea disappeared, the abdomen became a little swollen, and signs of congestion appeared in the face. After being in the cylinder two hours and forty minutes, the pressure being 430 millimetres, and the pulse 84, he took three whiffs of oxygen, and the pulse instantly descended to 78. Four minutes later, he inhaled more oxygen, the disagreeable symptoms vanished, and the pulse went down to 70. In another curious series of experiments, the professor finds that aerostatic pressure, even of oxygen itself, extinguishes life, and is destructive to organic compounds. Ferment organisms, such as bacteria, are almost instantly killed by the action of compressed air, or of compressed oxygen gas, while fermentations due to dissolved matter, such as diastase, perfectly resist the influence of atmospheric pressure. The ripening of fruit being arrested by compressed oxygen, Prof. Bert concludes that the phenomenon is one of cellular evolution. The poison of the scorpion, on the contrary, wholly resisting the action of increased aerostatic pressure, he concludes to be due to the pressure of compound similar to the vegetable alkaloids. Fresh vaccine lymph, after having been subjected to the pressure of 50 atmospheres for a week, retained its virtue; and Prof. Bert concludes from this fact, that its active principle is not the cell found in it, as many have supposed. The poison of glanders remained active after similar treatment, and carbunculus blood, though freed from bacteria by aerostatic pressure, still retained its dangerous properties. He concludes, therefore, that the bacteria, germs, cells, penicilium spores, etc., found in these poisons, are not the cause of their virulence.—*Med. Record.*

Development of Tænia Solium in Man.—M. Redon is a brave man. He wished to settle the question as to whether the cysticercus of man was identical with the cysticercus of the pig, and so he swallowed four cysts taken from the body of a dead man. He also administered some of the cysts to sucking pigs and dogs. The pigs died from enteritis and disclosed no worms, the dogs failed to develop the parasites. But M. Redon had himself the satisfaction of finding links of the worms in his passages at the end of three months and two days. These experiments settle the question that has been in dispute so long, that the tænia of man is the second stage of that of the pig in the negative, or at least show that in this case what was ordinary supposed to be the perfect tape worm could reproduce in another man. The law has seemed to be that the same parasite could not attain its complete development in the same individual or in two individuals of the same species.

Dr. Pierce's Golden Medical Discovery, according to a German chemist, consists of 15 parts clarified honey, 1 part extract of lettuce, 2 parts laudanum, 100 parts alcohol, and 105 parts water. This is to cure long standing coughs, inflammations, scrofulous and syphilitic diseases.

Cerebral Localization,—Dr. Brodhead, (International Medical Congress of Geneva,) gives the following conclusions as to brain function and lesion :

1. Paralysis is a rupture of fibres or cellules presiding over the mechanism of the nervo-motor apparatus.
2. Anæsthesia is rupture of sensitive mechanism.
3. Tremor is some impediment in the conducting power of the white fibres.
4. Convulsions, (including chorea) result from irritation of gray substance.
5. Premature and transcient contraction is connected with pressure on a ganglion.

Prof. Schiff said he did not believe in motor points in the brain, and that the role assigned to the corpora strata and optic thalami had not been proven by clinical investigation.

The Safety Pocket.—A lively personal discussion arose in the New York Odontological Society, from a paper read by Dr. J. A. Clowes, entitled "The Safety Pocket," which purported to treat with the subject of devitalizing dental pulps by means of arsenic secured in a "safety pocket," drilled in proximity to the nerve. A greater portion of the paper was taken up, however, by a tirade against all modern dental practice, characterizing

"the remorseless rubber, the swelling wood, the driven wedge, the jack-screw," as "offshoots of ignorance and relics of barbarism." The application of an arsenical paste directly to the diseased nerve, owing to its liability of coming in contact with the gums, seemed to be particularly displeasing to the Dr., who gravely avowed that "the victims to arsenical misuse and abuse are all around us; where civilization extends they abide, and gum and osseous tissue—fistulated and cavernous, necrosed and sloughing—are reeking with purulence and fetor!" Of course, these expressions could not be allowed to remain unnoticed, and several gentlemen took occasion to freely and severely criticize the paper, Dr. Atkinson remarking that "it is a lack of knowledge of pathology and physiology that makes Dr. Clowes say dentists are doing more harm than good."—*Dental Advertiser*.

Lead Poisoning from a Curious Source.—The *Medical and Surgical Journal* of New Orleans, has an account of an outbreak of lead poisoning in that city, the source of which was for a long time hidden in mystery. Sixty-five cases were observed, whole families being sometimes affected. Dr. Ducamp, to whom much credit is due for his patient and thorough exploration of the cause, having ascertained that the water supply was good, and that the "wine so universally used" was free from lead, discovered at length that the persons injured had all got their supply of bread from a certain bakery. "It is a well known fact," says the narrative, "that many bakers, to whiten their bread, add the sub-acetate of lead to the dough made with damaged flour." But the recognized honesty of the baker in this instance precluded all suspicion of such a trick. Dr. Ducamp finally observed that the baker heated his oven with wood from buildings which had been demolished in opening a new street. The wood was heavily painted and the lead of the paint, when the wood was burned, effected a lodgment on the floor of the oven in the form of oxide. When the loaves were placed on the floor of the oven, the poisonous oxide adhered to them, and the lead was distributed in this manner over the city.—*Pacific Medical Journal*.

Relation of Brain Weight to Mental Ability.—Mr. C. Clapham says, in the last volume of the West Riding Lunatic Asylum Reports:—

"My observations agree with those of Wagner, that weight of brain does not indicate any close relation to intellectual power, and also that aboriginal races are not to be distinguished for smallness of brains. In fact, the ancient Britons, and I may add the ancient Gauls also, were remarkable for good-sized, nay, even large brains." This statement is borne out by the testimony of the most competent craniologists of the day.—*Med. and Surg. Reporter*.

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ARTICLE I.

*Lesions of the Trifacial (Especially Facial Neuralgia),
Resulting from Diseases of the Dental
Organs and Adjacent Parts.*

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[Read before the N. Y. Neurological Society.]

Much has been written on the physiology and pathology of this important nerve, and much remains to be learned. The object of this paper is to bring more prominently to the notice of the profession a great source of neuralgia of the head and face. Without going at length into preliminary anatomical and physiological details respecting this fifth nerve, which must be known or readily accessible to all, I will commence at once with the subject.

Lesions of the Trifacial. (Facial Neuralgia.)

The term neuralgia is from the Greek *neuron*, a nerve, and *algos*, pain. Neuralgia is a *condition*, or *effect*, and not a *cause*—and refers to pain of a paroxysmal character—localized or metastatic, without manifestation of any lesion at.

its seat. The pains are nearly always unilateral; and usually follow the course of particular sensory nerves. The character of these pains is mostly acute—intermittent—regular or irregular, according to the amount of irritation.

The pre-disposing cause of neuralgia may be of a general or local character; and to appreciate it fully, is to search until whatever lesion exists, is discovered.

I shall only allude to the central and reflex nervous diseases incident to first dentition, and will but direct your attention particularly to those more obscure affections of a neuralgic character dependent upon lesions of *second dentition*. These lesions naturally divide themselves into (1) those that are reflex—~~near~~ or remote—and (2) those that are direct—immediate and from contiguity. In the former we may have epilepsy, neuralgia or paralysis; in the latter, local pain, facial palsy, or some forms of amaurosis. There are cases, however, which appear to comprise both conditions.

The branches of the trifacial appear to be the most susceptible to reflex action; and next to these, the cervical and brachial plexuses—hence, pains in the elbow, acromian process, insertion of the deltoid, neck or shoulder, with sometimes a loss of motor power.

Dr. Anstie, (Lancet, 1866, vol. II., pages 31, 32,) has mentioned two instances of wounds of the branches of the ulnar nerve causing reflex neuralgia of the fifth.

Reflex nervous irritations, from lesions of the dental organs, maxillary or nasal bones, are often very uncertain and capricious in their manifestations.

One may suffer much from a comparatively slight irritation, while in others the same condition will produce no result whatever.

There is undoubtedly a *neuralgic diathesis* which is hereditary, or induced, peculiarly in the centric or perhaps collateral relation of certain nerves. A *rheumatic* or *gouty diathesis* in one generation, may be followed in the next by a neuralgic diathesis; or it may pass over one generation

to appear in the third. Pathological conditions of mind or body, may predispose to attacks of neuralgia. In great mental exercise, rather than in physical, does this so often occur in lesion of the trifacial from dental irritation.

All the following abnormalities of the dental organs, maxillary or facial bones, have caused manifestations of reflex nervous irritation, namely :

Caries with or without exposure of the pulp-exostosis, hypertrophy of the cementum, osteo-dentine developments in the pulp cavity, periodontitis, periostitis, impaction of permanent teeth in the maxillary bones and maxillary abscess.

I will now proceed to illustrate by a narration of cases selected from very many that have come under observation.

CASE I.

Neuralgia of the neck and arms, from exposed dental pulps, by caries.

Mrs. A., of Philadelphia, came to consult me on account of a neuralgia for which she had been treated by her physician for the past two years without any permanent relief, and her suffering had steadily increased. She resorted hypnotics to obtain sleep. She complained of pain in her neck and arms, and the right side of her head. She said she was not aware that the teeth were ever the cause of such pain, and it had not occurred to her, nor had it been suggested to her by her medical attendant, that this might be the cause of her trouble. She was brought to me by a former patient who was "wiser in his generation" from having been a fellow sufferer. I made an examination of her month, and found two teeth on the right, and one on the left side of the month, with exposed dental pulps. The cavity in the enamel was very small, and she had not felt or even suspected that all her suffering came from her teeth. One of the dental pulps was on the point of suppuration, and had to be devitalized and the pulp extracted. The other two pulps were saved—irritation removed—inflammation subdued, then capped, and filled permanently with gold.

Three days after treatment was commenced, the neuralgia ceased, and has not since returned.

CASE II.

Neuralgia from exposed dental pulps.

Miss M. S., aged 16 years, was brought to me by her aunt, who said that her niece had suffered for the past two years with neuralgia of the face. It changed from one part of the face to another. Has had no appetite—was troubled in her sleep—was much depressed in mind, and weak in body. She had been compelled to give up her studies. As in the last case, I found exposed dental pulps, which were treated, and the neuralgia entirely disappeared. She is now in robust health.

CASE III.

Neuralgia of the superior and inferior dental and infra-orbital nerves, from exposed dental pulp.

E. W. D., aged 19 years, was sent to me by his family physician, November 25th, 1875, suffering from a neuralgia of the inferior and superior maxillary and infra-orbital nerves of the right side. His mother and grandmother were subject to facial neuralgia, and neuralgia in the feet. He has never before had neuralgia of the face in such a severe form. Has had his teeth cared for by one of our most skillful dentists—and has never had the slightest trouble with them. Has not had them examined for more than a year.

On examination, I found the jaws large and well developed, and all the teeth present except the right-lower wisdom tooth that was just now piercing the gum. The first superior bicuspid of this same side, had a large decay in it, and in consequence, the dental pulp was irritated. He would wake up at night with paroxysms of pain. I took away the irritant, and immediately his neuralgia stopped and has not returned.

CASE IV.

Neuralgia from irritation of the dental pulp.

In April, 1872, G. H. M., of New York, aged 36, an officer

in the Western Union Telegraph Company, called on me respecting a neuralgia of the right side of his face, which at times gave him much trouble. He particularly noticed, he said, that after eating fruit, or any thing of an acid nature, it very much aggravated his suffering. He did not think his neuralgia came from his teeth as he had them well cared for, and never had any pain in them. Indeed, he had many sources from which he thought his neuralgia came. He had been under treatment but the neuralgia still persisted in annoying him.

On examining the mouth and throat, I found every thing in good order. There were no decays in the teeth; but on the upper molar of the right side, there was a very large amalgam filling, and immediately below, on a molar of the lower jaw, a large gold filling; as the mouth closed, these fillings touched each other. Suspecting that these teeth were the source of all his trouble, I applied a weak current of electricity to them and my suspicions were fully confirmed. The different kinds of metal in the fillings of these teeth, and the acid from the fruit, excited a galvanic action which was carried through the thin layer of dentine under these fillings, and over the dental pulp, and set up an irritation sufficient to have caused him all the neuralgia. To cure this, was only to stop the galvanic action on the dental filaments. The filling in both teeth was removed, and a very small amount of some non-conducting material placed in the bottom of each cavity, and over the region of the pulp to cut off all galvanic and thermal changes from the irritated pulp. Then both teeth were filled with gold and his cure was complete.

CASE V.

Neuralgia from irritation of the dental pulp.

I was called in by a surgeon of this city to see his wife who had been suffering for some time with neuralgia of the face and neck of right side. She had lost a number of her molars, and those remaining had to do double duty. All decayed teeth had been carefully filled with gold, and as

they were small, no irritation was suspected to come from them. In one of the lower right molars, I discovered the cause of her neuralgia. By mastication the enamel had been worn off, and the irritation had been on the pulp by friction, and galvanic and thermal changes, together with a good deal of debility that she was suffering from. The local application of electricity to the pulp relieved the neuralgia almost instantly. Quinine was also administered. There has been no return of the trouble up to this time.

CASE VI.

Neuralgia from irritated pulps.

W. M. S., aged 48 years, from Virginia, R. R. Pres., sent to me by the President of this society, as he suspected that the neuralgia of his head proceeded from some irritation in the teeth or jaws since his case did not improve under his treatment. I found no decays in his teeth, but several of them had the enamel so worn by mastication that there was an irritation produced through the thin walls of dentine on the dental pulp.

Treatment, proper to such cases, relieved him entirely of his neuralgia, and "made a new man of him" as he expressed it.

CASE VII.

Hon. T. W. P., aged 57 years, has been a sufferer for some five years with facial neuralgia, and has had its foci at the temporal and supra-orbital points of both sides. He has been, since his youth, an inveterate chewer of tobacco. In several teeth the enamel was so much worn by mastication that the pulps were irritated, and in one or two teeth there was slight pulpitis.

The slightest friction, or thermal, or galvanic change, would bring on a paroxysm of neuralgia.

After the irritation and pulpitis was removed I put on gold crowns under which was placed some non-conducting material to prevent all thermal and galvanic action on the pulp.

CASE VIII.

Neuralgia from deposits in the dental pulp.

Mrs. C., aged 36 years, wife of a prominent surgeon, has been the subject of facial neuralgia for the past ten years.

Her husband consulted me in May, 1871, having suspected that possibly her neuralgia came from some of the dental organs. The principle focus was in the temporal, a point on the auriculo-temporal branch a little in front of the ear. It occasionally changed to the supra and infra-orbital nerves.

Mrs. C., has an undoubted neuralgic diathesis, as her family on her father's side for several generations back have been the subjects of neuralgia in some form. I found some teeth decayed, which I extracted; and, as I expected, found deposits in the pulp-chamber, and all along the canal. In some teeth I found the pulp-chamber filled with osteo-dentine granules, and the nerve alive half way up the canal. In others, the pulp-chamber and canal were half filled by deposits which crowded the vessels and nerve filaments into very small space, causing intense suffering.

She experienced great relief from the extraction of those teeth. It is important that all sources of irritation be taken away—such as metal fillings near the pulp, diseased gums, etc.

CASE IX.

Neuralgia from osteo-dentine deposits in the dental pulp.

H. G. H., aged 26 years, born in N. Y., very well developed, had severe neuralgia of the face but has never had toothache. On making an examination of the teeth, I found a superior molar decayed, and the pulp exposed. It was in such a condition that I considered it useless to try to save the pulp, and, therefore, put in a preparation to devitalize it. On his return next day, he expressed great delight in the relief he got from what he denominated a "tormenting pain."

On attempting to extract the devitalized pulp, I found the pulp chamber nearly filled up with a large deposit of osteo-dentine which required considerable cutting away of sur-

rounding walls of the pulp chamber in order to remove it. There did not appear to be any deposit in the canal. After the decayed cavity had been filled with a non-conducting material until all signs of irritation might be expected to pass away, it was filled permanently with gold. A non-conductor was placed in the pulp chamber after the canal in the roots had been filled with gold, to separate it from the gold in the cavity of decay and thus prevent any galvanic or thermal action from being carried up the whole length of the tooth.

CASE X.

Neuralgia from deposits in the pulp chamber.

F. G., aged 41 years, sent to me by Prof. F. H. Hamilton, in June, 1870, has had neuralgia of the right side of the face for the past twenty years. It was contracted by exposure to wet and cold in the gold mines of California. It has gradually increased until now the paroxysms appear about every five minutes. He is well developed physically, and has always been healthy until the present trouble supervened. But he now presents a most woeful appearance from his long and constant suffering.

The pain has been somewhat changeable. At first it appeared in the inferior dental at its exit upon the face, at the mental foramen, and forward to the center of the chin. A section of this nerve was made twelve and seven years ago with only temporary relief.

He now suffers very much from the infra- and supra-orbital nerves,—the former, particularly. During his paroxysms of pain he has lachrymation and salivation; and if in the middle of a sentence while speaking, he is obliged to stop short until it has passed away. He has taken all the known remedies for neuralgia; yet it has steadily increased. He is willing to submit to any treatment to obtain relief from his great trouble. No history was given of hereditary neuralgia rheumatism or gout.

The mouth was examined and all the teeth remained except a few of the back molars. The remaining teeth were

all sound with the exception of a very small decay in two superior molars which were filled and could cause no trouble. From my past experience in these cases, I was led to suspect that there were deposits in the dental pulps. A few teeth were extracted, and when the teeth were split open, osteo-dentine deposits were found enclosed in the vessels of the pulp. All the remaining teeth were extracted; and a section being made deposits were found either in the pulp chamber or in the nerve canal. In some of these teeth presented, will be seen large and small osteo-dentine granules in the substance of the pulp. In the canal of the roots will be seen also a narrowing of the canal by deposits to the walls.

As these calcified masses formed, the vessels of the pulp were encroached upon, and strangulated, and the pressure on the nerves caused severe pain.

In some of the teeth it will be seen that the dental pulp was entirely cut off in the fangs by deposit in the canals.

This patient remained under observation for some time before he returned to his home and up to that time appeared entirely relieved from his suffering, since which time, I have not heard from him. I cannot say that the prognosis will be entirely favorable in this case.

It being of long standing—the patient apparently in the decline of life—pathological changes in the structure of the nerve tissue may have taken place. The lachrymation and salivation is an unfavorable feature in the case, as it shows that he is suffering from secondary affection of the glands.

Whether these deposits in the tissue of the pulp are the true cause of his neuralgia, or a consequent in this case, is difficult to decide. Certain it is, that it has been a source of intense suffering.

CASE XI.

Catalepsy from polypoid growth of the pulp.

In 1870, a physician brought his son, aged 14 years, to me, and stated that he had a cataleptic fit the day before, and that in investigating the cause he observed a growth in

one of his lower molars. Thinking this to be very unusual, he consulted me concerning it. On examination, I found this to be a polypoid growth from the pulp. The tooth was very much decayed, and the growth more than filled the cavity of the tooth; for on closing the mouth the upper tooth pressed upon it and gave rise to such an amount of irritation as to cause the trouble.

I took out the tooth and he has not had any return of the catalepsy since.

These polypoid growths appear on their more superficial portions to consist of cells about 1-2000 of an inch in diameter. Deeper in the substance of polypus, it is more of a fibrous nature, and contains many capillary blood vessels.

Sometimes the surface is found to be indistinctly covered with epithelium. Occasionally the surface appears like true gum.

CASE XII.

Neuralgia of the infra- and supra-orbital and optic nerves from hypertrophy of the cementum and abscess.

Rev. Dr. J. D. W., came to see me in October, 1872, respecting a neuralgia and aphonia from which he was suffering, which greatly interfered with his duties. He describes his pain as a wave that commenced on his cheek and the sides of his nose (infra-orbital;) then it passes to his eyes, producing dimness of vision; and then by the supra orbital it passes over the forehead to a point on the frontal eminence at the coronary suture. On examining the mouth I saw that the soft palate on the right side was very red and swollen, and that it passed down the palato-pharyngeus muscle. A laryngoscopic examination revealed redness and thickness of right arytenoids and vocal bands, and slight paralysis of the same side—a rhinoscopic examination could not well be made, on account of the thickness of the soft palate. He had some naso-pharyngeal catarrh. I suspected the cause of the neuralgia was the right superior wisdom tooth, and on extracting it found a large abscess at its root, with hypertrophy of the cementum.

After a short treatment, his neuralgia and aphonia disappeared.

November 26, 1875, the doctor came again suffering from his neuralgia, but without the pharyngeal difficulty.

He had only four molars remaining in the upper jaw. These were extracted and the roots found to be very much hypertrophied, and the nerves and vessels entirely shut off by the deposit in two teeth, and a third nearly closed. The periodontal membrane was very hyperæmic. A portion of the external alveolus came away, being adherent to the roots.

December 29, 1875, the doctor writes me that his neuralgia has all disappeared.

CASE XIII.

Neuralgia of inferior and superior dental nerves, from a bristle in the pulp canal.

Miss A. N. complained of a severe neuralgia of the inferior and superior dental, and infra-orbital nerves of the left side, which came on quite suddenly while at dinner; and has since given her no rest. Nervines were administered by her family physician, but to no purpose; and she had been advised to try a change of climate. She was about to carry out this advice, when she was brought to me. Up to the time that her neuralgia commenced, she had enjoyed excellent health. I could not discover any predisposing cause for her severe trouble, and therefore considered that it proceeded from a local irritant. Her teeth had been well cared for, and she had never had any trouble from them. After a very careful examination, I discovered a small fistulous opening behind an upper molar tooth, and the probe passed down to a root of the tooth. There was no inflammation about it; nevertheless I advised her to have it taken out. On extracting it, I found, sticking out of the canal, at the apex of the root, a bristle which had probably been disengaged from her tooth brush and found its way into the canal, and during mastication had been driven

through the end of the root into the nerve. There was slight necrosis at the apex. It is needless to say that her neuralgia vanished instantly.

The following cases show that irritation of the spine may cause reflex action of some branches of the trifacial.

CASE XIV.

Reflex action from spinal disease.

Minnie M., aged 14 years, suffering from disease of the spine, for which she has received treatment.

At present one of the most uncomfortable features of her case, and that one which gives her parents some anxiety, is the terrible grinding of her teeth in her sleep. Her mother says that she rises, some nights, several times to go to the adjoining room and awake her.

The teeth and mouth are in a healthy condition. Her front teeth are worn off very much by constant grinding, and the pulps would soon have been reached had not a splint of gold and hard rubber been made to cover over the crowns of the teeth, to be worn during her sleeping hours. Her spinal trouble as well as the reflex difficulty, are now very much improved.

CASE XV.

A young lady applied for relief from a neuralgia that affected her jaws and the lower part of her face.

From her history, I could not make out any hereditary tendency to neuralgia, neither could I discover any local lesion from the dental organs, or maxillary bones. Thinking her trouble was perhaps due to some mal-assimilation of food by some perturbation of the fluids, I at once tasted the saliva, and found it quite acid.

On questioning her respecting her digestion, she said that her stomach had given her some distress; but since the neuralgia set in it was not so bad. She then told me that she was very fond of candy, and was never without it. The cause of her neuralgia was soon solved. The acid condition by the fermentation of the sugar in the fluids of the mouth and

stomach, produced an irritating effect on the dental nerve filaments, thus giving rise to her neuralgic trouble. The eating of acid or fruits will sometimes produce the same effect. An alkaline condition will also do the same. I forbade the use of candy, advised plain food with plenty of out-door exercise, and her neuralgia soon left her.

CASE XVI.

Neuralgia from maxillary abscess.

A gentleman was brought to me by his family physician, complaining of severe neuralgia in the left ear, with partial deafness, of the inferior maxillary nerve at its exit from the mental foramen and forward to symphysis and border of the lip; and occasional twinges in other nerves of that side. Has been suffering from this neuralgia for two years. His habits were regular, and he had always enjoyed good health up to this time. He was an inveterate chewer of tobacco, and his neuralgia had increased that habit, and it consequently had no good effect on his trouble.

Rhinoscopic examination revealed nothing special. Anterior and posterior nares healthy with the exception of some thickening of the mucous membrane. Jaws very well developed and all the 32 teeth were present without decay, as I made a most thorough examination of them with a very delicate instrument.

Placing my patient in a very strong sun light, I discovered that the wisdom tooth of the left lower side was a shade darker than the rest, and worn somewhat on the crown by mastication. Electricity indicated that this tooth was the cause of some trouble. I next cut through the enamel where it had been nearly worn off by mastication, but found no sensation under the enamel and on the surface of the dentine where it would be natural to find it in healthy teeth. Concluding the dental pulp was dead, I drilled into it and found this to be the case—pus coming out after my instrument.

The tooth was extracted and a pus sac as large as the tooth itself came out hanging on the fangs. Below this sac, in

the jaw, there was some necrosis of the cancellated structure of the bone.

The joy of my patient was very great on being so speedily and perfectly relieved of a long and painful neuralgia.

CASE XVII.

Neuralgia from abscess in the antrum of Highmore.

I was called to see Mrs. A. H., aged 44 years, of Philadelphia, who was suffering from a neuralgia of the right infra-orbital, superior and inferior maxillary nerves. There was some dimness of vision of the right eye and slight iritis.

A year before she had some roots extracted from the upper jaw of that side, from which she obtained relief from tooth pain. Shortly after her neuralgic trouble commenced, which steadily increased notwithstanding all treatment. During this time, she had all her teeth extracted, but the neuralgia was no better. When I saw her the alveolus appeared healthy, except that on the right side there was some bulging of the buccal wall of the antrum, and also in the palate on that side.

I also discovered a very small sinus through the alveolar ridge leading towards the antrum, which admitted only the smaller probe. It did not pass into the antrum. There was some obstruction.

There had been so small a discharge from this sinus that the patient was not aware of its existence.

Recognizing her trouble as connected with the antrum, I trephined through the track of the sinus and found the apex of an exostosed root of a tooth that had most probably been pushed into the antrum by the efforts to extract it.

After some months of local and general tonic treatment, she entirely recovered.

ARTICLE II.

*The Liquefaction of Gases Hitherto Thought to be
Incoercible.*

Towards the end of December considerable interest was excited by the announcement that the liquefaction of oxygen had been effected at Geneva by M. Raoul Pictet, on the 22d of December. When, however, the subject came before the Academy of Sciences, at its *seance* on the 24th, the interest was heightened by the announcement that M. Pictet had been to some extent anticipated, in that M. Cailletet, who a short time since succeeded in liquefying binoxide of nitrogen, had also effected the liquefaction of oxygen and of carbonic acid on the 2d of December, although in consequence of some consideration as to his pending election to the body, instead of the fact being published at once, a record of it had been intrusted in a sealed packet to the custody of the Secretary to the Academy on the 3d. At the sitting of the Academy on the 31st December it was announced that M. Cailletet had succeeded in liquefying nitrogen, hydrogen and atmospheric air. The following account of the operation by which these results were effected is taken from *Comptes Rendus* of December 24 and 31.

To give M. Cailletet precedence. The following are the terms in which M. Cailletet communicated his success with oxygen and carbonic oxide to his old master, M. Sainte-Claire Deville, and which formed the basis of the sealed packet:

"I am anxious to tell you first and without the loss of a moment that I have to-day liquefied carbonic oxide and oxygen. I am, perhaps, wrong to say liquefy, for at the temperature obtained by the evaporation of sulphurous acid, *i. e.*, -29° and 300 atmospheres, I do not see the liquid, but a fog so thick that I may conclude it to be a vapor very near the point of liquefaction. I am writing to-day to M. Delenil for protoxide of nitrogen, by the help of which I

shall, no doubt, be able to watch the flow of a stream of carbonic oxide and oxygen.

"P. S. I have just made an experiment that puts my mind at rest. I compressed hydrogen at 300 atmospheres, and after cooling at -28° , I allowed it to expand suddenly. There was no trace of fog in the tube. My gases (CO and O) are, therefore, nearly upon liquefaction, this fog being produced only with vapors near liquefying. M. Bethélot's anticipations are, consequently, being completely realized."

The following is the more detailed account read before the Academy on the 24th of December:

"If oxygen or pure carbonic oxide be inclosed in a tube of the form I have previously described, and placed in the compression apparatus already exhibited before the Academy,* and the gas be brought down to a temperature of -29° by means of sulphurous acid at the pressure of about 300 atmospheres, these two gases retain their gaseous condition. But if they are suddenly allowed to expand, so as to produce, according to Poisson's law, a temperature of at least 200° below the initial temperature, immediately an intense fog, produced by the liquefaction, and, perhaps, solidification of the oxygen or carbonic oxide, becomes perceptible.

"This phenomenon is observed also on the expansion of carbonic acid and the protoxide and binoxide of nitrogen when under strong pressure.

"This fog is produced with oxygen even when the gas is at the common temperature, provided time is given for the escape of heat it acquires by the mere act of compression.

"This I demonstrated by experiments conducted on Sunday, December 16th, at the chemical laboratory of the Ecole Normal Supérieure, before a number of scientific men, among whom were some members of the Academy of Sciences. I had hoped to find at Paris, together with the

* This compression apparatus, which is described in the *Comptes Rendus* for November 5 last, is a hollow steel cylinder, in which the gas is compressed by means of a hydraulic pump with the intervention of a layer of mercury.

materials necessary for the production of a high degree of cold (protoxide of nitrogen or liquid carbonic acid,) a pump capable of taking the place of my compression apparatus at Chatillon-sur-Seine. Unfortunately, a pump well fixed and suited to this kind of experiment could not be found at Paris, and I was obliged to send to Chatillon-sur-Seine for the refrigerating material for collecting the condensed matters on the walls of the tube.

"To know whether oxygen and carbonic oxide are in a liquid or solid form in the fog would require an optical experiment more easy to imagine than to carry out, on account of the form and thickness of the tubes containing them. Chemical reactions will also allow of the demonstration that the oxygen is not transformed into ozone in the act of compression. These questions I shall endeavor to solve with the help of the apparatus which I am now having made.

"Under the same conditions of temperature and pressure even the most rapid expansion of pure hydrogen gives no trace of nebulous matter. There remains, therefore, only nitrogen to study, and the small solubility of this gas in water leads me to suppose that it will be very refractory to any change of condition."

At the meeting of the following week, however, M. Cailletet was able to report a great advance towards the solution of this problem in the following "Note on the Condensation of Reputedly Incoercible Gases:"

"I have continued my experiments upon the liquefaction of gases, and I am happy to announce that I have succeeded in liquefying nitrogen atmospheric air. Hydrogen itself has given indications of liquefaction, as will presently appear.

"The following are some details of my experiments:

"*Nitrogen*—Pure and dry nitrogen, submitted to a pressure of about 200 atmospheres, at a temperature of -13° , and the pressure then suddenly relaxed, is condensed in the clearest manner. There is produced at first a matter similar to an atomized liquid (*liquide pulverise*), in particles of

an appreciable volume; then the liquid gradually disappears from the sides towards the center of the tube, forming at last a sort of vertical column directed along the axis of the tube itself. The total duration of the phenomenon is about three seconds.

"These appearances leave no doubt of the true character of the phenomenon. I first made the experiment at home, at the temperature of -29° , and I repeated it yesterday a great number of times in the laboratory of the Normal School, in the presence of several scientific men and members of the Academy, among whom I may mention, with his consent, the venerated M. Boussingault.

"*Hydrogen*—Hydrogen has always been regarded as the most incoercible gas, because of its slight density and the nearly complete conformity of its mechanical properties with those of a perfect gas. It was therefore only with extreme distrust as to the result that I decided to submit it to the same tests as have determined the liquefaction of the other gases.

"In my first attempts, I could not recognize anything unusual, but, as it often happens in experimental science, the habit of observing the phenomenon leads to being able to recognize signs under conditions where at first they passed unperceived. This is what occurred with hydrogen. In an experiment to-day, in the presence of MM. Barthelot, H. Sainte-Claire Deville and Mascart, who have kindly authorized me to invoke their testimony, I have succeeded in observing indications of the liquefaction of hydrogen, in conditions of evidence which did not appear doubtful to any of the learned men who witnessed the experiment. This has been repeated a great number of times. In operating with pure hydrogen, submitted to a pressure of about 280 atmospheres, and then suddenly released, we have observed the formation of an excessively fine and subtle fog suspended through the length of the tube, and which disappeared suddenly. The appearance of this fog, notwithstanding its extreme subtlety, has appeared incontestable to all the sci-

entific men who have witnessed the experiment to-day, and they have taken care to repeat the experiment several times so as not to allow of any doubt as to its reality.

"Air—Having liquefied oxygen and nitrogen, the liquefaction of air had been thus demonstrated; however, it appears to me to be interesting to make the direct experiment, and, as might be expected, it has succeeded perfectly. It is unnecessary to say that the air had been previously dried and deprived of carbonic acid. Thus has been confirmed the exactitude of the views put forward by the founder of modern chemistry, M. Lavoisier, upon the possibility of making air assume the liquid state, producing matters endowed with new and unknown properties."

The object at which I have been aiming for three years past is to demonstrate experimentally that molecular cohesion is a general property of bodies, without any exception. If the permanent gases cannot be liquefied, it would be necessary to conclude that their constituent particles do not attract each other, and are thus exempt from this law. To succeed by experimental means in bringing the particles of a gas into the closest possible proximity, and thus accomplish its liquefaction, certain indispensable conditions have to be complied with, which I summarize as follows: (1) To have an absolutely pure gas, free from any trace of a foreign gas; (2) to have at command very powerful means of compression; (3) to obtain an intense degree of cold, and the abstraction of heat at these low temperatures; (4) to have a large surface of condensation maintained at these low temperatures; (5) to be able to utilize the expansion of the gas under considerable pressure to the atmospheric pressure, which expansion, added to the preceding means, compels liquefaction. These five conditions being fulfilled, we may formulate the following problem: When a gas is compressed at 500 or 600 atmospheres, and kept at a temperature of -100° or -140° and then allowed to expand to the pressure of the atmosphere, one of two things must happen: either the gas, obeying the action of cohesion, becomes

liquid, giving up its heat of condensation to the portion of the gas, which expands and is lost to the gaseous form; or, under the assumption that cohesion is not a general law, the gas passes beyond absolute zero, that is, becomes inert, a dust without consistence. The work of expansion would be impossible, and the loss of heat absolute.

"Impressed with the certainty that thermo-dynamic equations rest upon fixed numerical forms, I sought to contrive some mechanical means for realizing the conditions summarized above, and selected a complex apparatus that I may describe as follows:

"I took two suction force pumps such as I use industrially in my ice-making apparatus. These I coupled so that the suction of the one corresponds to the compression of the other. The suction in the first communicates with a tube 1.10 m. long, filled with liquid sulphurous acid. Under the influence of a perfect vacuum, the temperature of this liquid is rapidly lowered to -65° or even -73° , the extreme limit which has been obtained. Into this tube of sulphurous acid there passes a second smaller tube, measuring six centimetres in exterior diameter, and of the same length as the tube in which it is inclosed. These two tubes have a common bottom. In the central tube I compressed carbonic acid produced by the decomposition of Carrara marble with hydrochloric acid. This gas was dried, then collected under an oil-gas holder of one cubic metre capacity. With a pressure varying between four and six atmospheres carbonic acid is easily liquefied under these conditions. The fluid flows down by its own weight into a copper tube four metres in length and four centimetres in diameter.

"Two pumps, coupled in the same way as the first pair, volatilize the carbonic acid in the gasometer, and the long tubes fill with the liquid acid. Admission to the pumps is regulated by a three-way tap; a screw-regulating tap intercepts, if desired, the entry of liquid carbonic acid into the long tube; it is placed between the carbonic acid condenser

and this long tube. When the regulating tap is closed, and the two pumps suck up the vapor from the liquid carbonic acid contained in the four-metre tube, the lowest temperature is produced that can be got; the carbonic acid solidifies, its temperature falling to about -140° . The work of abstracting heat is kept up by the pumps, which have a joint cylinder capacity of three litres per stroke and make 100 strokes per minute. Both the sulphurous acid tube and the carbonic acid tube are inclosed in sawdust and baize to prevent radiation.

"Into the interior of the carbonic acid tube there passes a fourth tube, five metres in length, fourteen millimetres in external diameter and four millimetres in internal diameter, which serves as the oxygen compressor. This long tube is surrounded by solid carbonic acid, and the whole of its surface is brought to the lowest temperature that it is possible to obtain. These two long tubes are connected at the lower ends with the carbonic acid tube; consequently, the small tube goes beyond the other by about one metre. This portion I bend towards the ground, giving both tubes a slightly inclined position. The small central tube is bent down, and screwed into the neck of a strong cylindro-conical retort, made of wrought iron, the walls of which are 35 millimetres thick. Its height is 28 centimetres and diameter 17 centimetres. This retort contains 700 grammes of potassium chlorate and 256 grammes of potassium chloride mixed together, fused, pulverized, and placed in the retort perfectly dry. I heat the retort when the double circulations of sulphurous acid and carbonic acid have lowered the temperature to the point desired. The chlorate of potassium is decomposed slowly at first, but tolerably rapidly at the end of the operation. A pressure gauge at the end of the long tube enables me to watch the pressure and the progress of the reaction. It was made on purpose for me by Bourdon, of Paris, this last summer, and is graduated up to 800 atmospheres.

"When the reaction is finished, the pressure exceeds 500

atmospheres; but it almost immediately falls, stopping at 320 atmospheres. If the screw-tap at the end of the tube be opened at this moment, a jet of liquid may be distinctly seen escaping with extreme violence. If the tap be then closed, a few seconds later a second jet may be obtained, this time less abundant. Pieces of charcoal, slightly kindled, placed in this jet, ignite spontaneously with incredible violence. I have not yet been able to collect the liquid, on account of the force with which it is projected; but I am now endeavoring to combine a cooled gauge, which may, by means of cloths, retain a little of the liquid.

"Yesterday (Monday, December 24th, 1877,) I performed this experiment a second time before a good part of the members of our Physical Society, and we had three well-defined jets, one after the other. I cannot yet give the minimum pressure necessary, for it is evident that I must have had an exaggeration of the pressure produced by an accumulation of the gas in the retort, which resists condensation in the narrow space represented by the inner tube.

"I intend using a similar apparatus to attempt the condensation of hydrogen and nitrogen, and I rely especially on my ability to maintain low temperatures with ease, by steam power.

"I believe that it is in this direction particularly that it is necessary to work to effect the rebellious condensations, since the tension of saturated vapors is a direct function of the temperature. I am having a plan of my apparatus drawn up, and it will be my pleasure and duty to send it to you in the course of the week. I have learned with great interest that M. Pictet has arrived at the same result with myself, and almost at the same moment. I have no idea as to what his process may be, but we shall doubtless enter into correspondence before long, and exchange our ideas on this interesting subject."—*London Pharmaceutical Journal.*

ARTICLE III.

Some of the Causes of the Decay of the Teeth of Americans.

BY PROF. HODGKIN.

Read before the Medical and Surgical Society of Baltimore,
April 4th, 1878.

MR. PRESIDENT AND GENTLEMEN.—As physicians, you are well aware of the fact that a very large class of the ills and ails of infants that fall under your professional care, are caused, directly or indirectly, by difficult or defective or retarded dentition; and the medical books are full and medical practice is loaded with works of this class. It is not my province to discuss this subject of dentition, or, as our English friends call it, *teething*, but only in passing to call your attention to the fact that these temporary teeth are in this day oftener lost by caries than by the normal and physiological process of shedding, and to ask your attention also to a fact which is peculiar to these teeth—i. e., the position of decay in the lower molars. We find that the temporary teeth are attacked by caries on their grinding and proximate surfaces, much the same as in the adult; but there is, in addition, a peculiar point of decay, so seldom met with in the adult as to exclude it from classification, and that is the location of the affection on the lingual surfaces of the lower temporary molars. Now, caries is found almost everywhere else than at this point in adult teeth, and it is worth while to bear this fact in mind, as it may be of service to us in some future discussion; and possibly some of you may be able to throw some light upon it to-night.

Normally, the temporary teeth are displaced by absorption of their roots, and the eruption of the permanent teeth follows in due course of time, and in regular order. This is *normal* teething. But in our day, such is the condition into which our children have fallen, that we find the tem-

porary teeth are lost by caries rather than by shedding, and that the eruption of those which are expected to be permanent (though the term is almost a misnomer) takes place in edentulous jaws, the predecessors of these having been extracted to relieve the little sufferer of agonizing pain.

Let me call your attention to some peculiarities in the process of second dentition. You are aware that the first set consists of ten teeth for either jaw. You are also, of course, familiar with the beautiful physiological processes by which these teeth are evolved—beginning almost with conception and ending in the twentieth year. The details I will not burden you with—only asking your special attention to the fact that the first permanent molar is anatomically a member of the second or permanent set, but physiologically it belongs with the deciduous teeth. For while this tooth is erupted *with* the permanent set, it is formed in a sac not evolved from the temporary, as are the other permanent teeth, but is an occupant of the primitive dental groove.

It is so well known by dentists that this tooth—the first permanent molar—is the first usually to decay, that, were I addressing dentists, I should feel called on to apologize for mentioning so trite a subject. But, while as specialists we are expected, and ought to be, perfectly conversant with such facts, you who are physicians cannot be called to so strict an account. It is a fact, then, gentlemen, that the first permanent or six-year molar, is, of all the teeth, the most susceptible to decay, and is most frequently lost.

I pass over the eruption of the other teeth until we come to the canine, which is erupted about the twelfth year, and followed closely by the second permanent molars; and the case is concluded by the third molar or wisdom tooth, which appears about the twentieth year.

So much for the order of eruption, and it is important to bear this in mind, that we may fairly understand the case before us; for it is a strange fact that nearly in the order of their eruption are these teeth affected by caries. I have no

time, nor can I think of burdening you with the details of the relative liability of these teeth to decay; but I simply wish to fix in your minds the fact that the first permanent molars are the first to go; the order of loss is nearly regular—*i. e.*, the next erupted are the next to fall, and so on. It may be objected that the wisdom tooth is often, very often, lost, which I admit, but the causes influencing its loss are such as do not affect the statement; for, while it is dense in structure, it is the most difficult of all the teeth to keep clean.

Now, I have stated my case. I have stated what are most generally known facts among dentists—that in the order in which teeth are evolved and erupted they are lost by decay. And you will understand that in the few minutes I have to speak to you, I cannot go into minute particulars, or burden you with what few of us delight in—statistics.

Why is it that we lose our teeth in this way? Why is it that these organs which nature certainly intended should serve the purpose of mastication throughout our three-score years and ten, and be buried with us at last—why is it that they lie scattered along the pathway of our lives, ornamenting the collection of curiosities of some dentist; or, as irritating stumps, be the cause of endless annoyance and pain? While we are yet in our youth we are perforce (and this in spite of the vast progress which is being made in the art of preserving the teeth by filling them)—in spite of the fact that our knowledge of hygiene in other directions is prolonging life, and rendering it more tolerable to the feeble—in spite of all this, many are wearing artificial substitutes for natural organs, and the proportion of such is annually increasing, until the very children are losing these priceless treasures.

Some deep-seated cause is here. The immediate cause of dental caries we infer to be an acid condition of the secretions of the oral cavity, added to the effect produced by the decomposition of particles of food retained between the

teeth. But behind all this is the plain fact, staring us in the face, that this is only the *proximate* cause, and that the predisposing cause must lie deeper. This is plain from the fact that the teeth of the lower omniverous domesticated animals—the dog, cat, &c., used in the mastication of substantially the same food, are not attacked by decay—indeed, in these animals, are rarely lost at all.

The loss of teeth by caries is peculiar to the human race, and peculiar only to the more civilized part of that race, and peculiarly to the Anglo-American. I am not prepared to say to what extent Europeans lose their teeth, but the impression prevails that they do not do so to the extent that we do; and as for the semi-savage and barbarous tribes, they are exempt from this curse in the main.

I have referred to the order in which the teeth are erupted—and have indicated that it is in the order of their development. We have seen further that these processes date far back in the history of the yet unborn child. In that mysterious evolution of which we know so little—in that occult process of the “growth of the bones in the womb of her that is with child,” so very early in the life of the foetus as to excite incredulity when the statement is made to the unscientific—the germs of the deciduous and the permanent teeth are formed; and before birth, their character is more or less firmly fixed for good or for ill.

In this wonderful laboratory of nature, where pulp and dentine, enamel and cementum are formed, where calcification is progressing, and “form and substance” are being given to organs which are as yet in embryo, a slight cause may disturb the balance of forces and effect the nutrition of these teeth.

A nervous, over-worked man, with feeble muscles and imperfect digestion, with brain force up to its highest tension, dyspeptic and prematurely old, comes from a day of harassing care, at night to share the bed of a hysterical, flabby-muscle anæmic woman, all of whose organs are out of tone, and whose whole life-force is exhausted in her monthly pe-

riods. Too little of a woman to be other than passive under his conjugal embraces, too feeble for anything except the unfortunate inevitable conception which takes place, altogether unfit for the conditions which maternity imposes—this makeshift of a woman—this absorption of a true mother—carries in her for nine months the babe which she, at the fullness of time, brings all immature and imperfectly developed into the world. The history of those nine months is better known to you than to me. The utter want of tone, the absence of all elasticity, the yielding up to languor and debility, the defective nutrition—too often is it the case that the maternity is undesired, and the mournful spectacle is seen of an unwilling mother. Can there be a more lamentable condition of affairs? Can there be any hope, except that “great nature is more wise than we?”

Is it any wonder that the development of this child is bad? Is it any matter of mystery that we find it like its parents? Its after-history is seen in the record of your vital statistics, which show that half of these unfortunates perish by the age of five years, and that half of the survivors die of consumption.

Some survive, thanks to the admirable hygiene of our day. Good nursing, skillful medication, all the arts of modern science are brought into requisition, and the lines of some are prolonged until they outgrow their feebleness. Our physiology teaches us that their bones change, their tissues moult and are cast off, that their structures, by exercise and the beneficent help of a Providence, which *tends* to set us upright, no matter how we may be warped by malformation, are improved, until the feeble child of feeble parents is developed into something of robustness—only *something*, for the constitution is, as we know too sadly, anything but good, and succumb readily to disease.

But the same physiology teaches that while these improvements are being made in the tissues—the bones, muscles, &c.—the *teeth* are not susceptible to such change. They are *calcified*, not ossified, and as they are formed so they

remain. The truth *seems* to be that the enamel, the outer covering of the tooth—hard, dense, almost vitreous and practically inorganic—when once formed, can undergo no change of a physiological character, but remains throughout life as when first calcified.

Now, when we revert to the statements made earlier in this paper—to the fact that those teeth which are first formed are first to be destroyed by caries ; that the temporary teeth are often attacked the first year of this eruption ; that the first permanent molars, which belong there physiologically, are almost as easily destroyed ; that the canines and wisdom teeth, which are matured in extra-uterine life, and when the tissues have opportunity for more perfect nutrition, are the strongest of all—I come to the conclusion that the great predisposing cause of the decay of the teeth of Americans is that of defective intra-uterine development.

Of course it is not for me to suggest (nor do I understand that this is the place or time) the remedy. And we all know perfectly well that argument would be useless in the presence of the mightier and all-potent, irresistible influence which impels marriages of unphysiological character. The feeble will mate with the frail I fear to the end of time, and what has been I suppose will be. But we can, perhaps, help by a few suggestions the condition of matters, which is certainly lamentable enough. You, gentlemen, of the medical profession, are in a better position than we of the dental profession to advise and counsel those who are bringing into the world so many delicate children, with imperfectly developed organs and structures, and you can earnestly advise the use of such hygienic means as may tend to modify this condition of affairs. Get your patients to understand that the function of gestation is of prime importance, not simply an accident of coition ; that maturity is sacred, that the chances of having healthy offsprings are greatly increased by the approximate perfection of the physical condition, and that mothers may at least tend to secure better teeth for their children by bring-

ing about in themselves the highest type of development. All that can influence the love of a mother for her child, its future welfare, its strength, its constitution, she should know; and should know also that her mental condition is likely to affect her child's future.

I sum up, then, my conclusions (and I will be glad to have any light upon a subject about which I feel that I know less even than most of my hearers:)

1. That as teeth formed in structure, so they remain.
 2. That they decay in somewhat the order, all other things being equal, of their calcification and eruption.
 3. That teeth which are calcified in extra-uterine life, if the conditions of calcification are favorable, are less liable to decay.
 4. That the condition of the mother, and possibly of both parents, materially influences the condition of the teeth so far as their calcification is concerned, and consequently their durability.
 5. That the teeth of animals living more physiologically than civilized man, are not subject to dental caries; and that: Finally, good teeth will withstand even ill treatment.
- *Virginia Med. Monthly.*

ARTICLE IV.

Care of Children's Teeth.

BY DR. KLUMP.

[A Paper read before the Susquehanna Dental Association.]

There is, perhaps, nothing pertaining to dentistry that is of so much importance and yet so generally neglected as the care of children's teeth. Parents, from the want of proper knowledge regarding them, are somewhat excusable for this seeming neglect. But with the dental practitioner no such excuse should have any weight, though many might consciously, and some perhaps even willingly, acknowledge

this ignorance regarding them. Parents are inclined to look upon the preservation of the temporary teeth with some misgivings, that it is to give the dentist employment at the expense of the parent for teeth which at best will be useful but a few years. Dentists, too, are very tardy in their duties in this respect for several apparent reasons. Childrens are at best restless and troublesome to operate for. We all find it much more difficult to operate for a child than for an adult. Operations for children often prove imperfect and unsatisfactory when the dentist has done his utmost to perform them carefully and well. But notwithstanding all the labor, anxiety, trouble and difficulty we have in operating for the little patients, we find that the bills are often reluctantly met, and, in some instances, considered as so much money thrown away. We see, then, that with all the trouble, vexations and difficulties these operations add but little to the exchequer of the dentist, and, perhaps, even less to his popularity. But, however, exhaustive and unsatisfactory such operations may prove, a well qualified conscientious dentist will not falter from his duty. He will not relax effort, and will not neglect a plain line of duty for something more popular or more remunerative. The deciduous teeth are subject to the same laws of decay as the permanent ones, and should, therefore, receive the same care and attention. To so modify the natural tendency to decay and insure a perfect set of teeth in all cases, is obviously impossible until our knowledge in this direction is vastly increased. We look forward, however, to greater improvements in this direction, and have great hope that the dentist of the future will be able to supply the proper nourishment for producing better teeth.

ELEMENTS OF TEETH.

We find by chemical analysis that teeth are largely composed of lime, principally the phosphates and carbonates. It is these elements which give to them the extreme hardness found in the best teeth, while the softer and more de-

fective teeth contain a much smaller proportion of these constituents. Many mothers suffer exceedingly from dental decay during gestation and lactation, which is doubtless caused by an insufficient supply of the phosphates and carbonates with which to keep up the repair and to build up new dental tissue. The experiments of Chossat prove that softening of the bones may be artificially produced in animals by withholding food from them containing the phosphate of lime. Common sense would suggest that if these materials are required they should be supplied, especially during the formative period in childhood. The mother should be supplied with food containing largely these ingredients from the beginning of gestation till birth, and even through the entire period of lactation. And when the child, from age or other cause, is denied the food provided by nature, we should supply food rich in these elements, and prohibit as much as possible the taste for food that contains these ingredients but sparingly. For nature always selects and appropriates from a superfluity what she needs. In the field the crop may suffer from the meagre quantities of the proper constituents needed in the soil, although the very constituents are not all exhausted—but supply these profusely and mark the almost immediate change. As the soil is improved to nourish the plants by supplying the necessary constituents, so it seems to us the blood may be improved so as to properly nourish every part of the human economy. It seems obvious that we should supply through the food these elements, rather than by medicinal means, on account of the greater probability of assimilation and appropriation.

THE SECOND SET OF TEETH.

The regularity and evenness of the second set is also dependent upon the preservation and retention of the deciduous teeth. If caries is not prevented or arrested it will not only destroy the temporary teeth, but the permanent ones will also suffer from them, especially those in close prox-

imity. It is also important to retain the deciduous teeth in good condition till they are replaced by the second set, both for the comfort and health of the child. When they are defective there is generally more or less pain produced in mastication, and then the child, from its desire to avoid pain, uses them less and less, as they grow worse, till the food is finally swallowed nearly, if not entirely, in the same condition that it is taken into the mouth. Such a habit once fully contracted is scarcely ever entirely overcome. The food then being only partially masticated, digestion is impaired, and the duties of the stomach are thus augmented; dyspepsia with all its concomitants ensues, and drags the patient through a pitiable life down to an early grave. The design of nature is to preserve the crowns of the temporary tooth till its roots are absorbed and it becomes loose and is removed to make room for its permanent successor. Could the temporary teeth always be retained in a perfect condition, it would save much of the defectiveness and irregularity of the succeeding set. Then, again, the premature extraction of the deciduous teeth frequently leaves such very terrible impressions upon the mind of the child, that in after years the permanent set are neglected and lost in consequence of the frightful associations connected with their early experience in dentistry. By carefully preserving the child's teeth we spare it much pain and suffering during mastication. We prevent the tendency of bolting the food. We prevent much of the irregularity and unevenness in the succeeding set. We prevent injury to the general health, as the immediate result of imperfect mastication. But, notwithstanding, the great necessity of preserving the temporary teeth, it is obviously more important to preserve the permanent ones. How much an even, regular set of teeth add to the comeliness of the features and the beauty of the expression? And how small any alteration in the teeth may distort the features and cause a disagreeable ugliness. The extraction of a single tooth, either for youth or adult, will produce a change in the remaining teeth. This may

be so slight as to be noticeable only upon close examination, or it may be so marked as to cause a hideous deformity. It is surprising to observe how slight a change in the features of one comely and beautiful may cause a disagreeable, ugly expression. A great many of the most disagreeable deformities are caused by injudicious extraction, and often, too, by men who are otherwise worthy practitioners.

OTHER CAUSES.

And then there are other cases, although not actually caused by the operator, which might have been prevented or easily corrected, without any of the ordinary regulating appliances by judicious and timely extraction. It does seem as if this subject was pressing itself upon the notice of the profession with such alarming frequency as to demand our most thoughtful attention. Should there be any doubt in regard to its seriousness and importance, it is only necessary to examine carefully every case of irregularity with a view of ascertaining the cause, to convince the most indifferent or skeptical. Upon examination you will observe where the upper front teeth strike upon or inside of the lower teeth, the irregularity is often caused by the injudicious extraction of the superior first molars; or you may have an apparent protrusion of the upper teeth, caused by the extraction of the inferior first molars. The front teeth may lean to one side, either or both jaws be contracted. Bicuspids and molars leaning backward or forward, either or both, and other equally prominent malformations may all be traced to this evil. But we sincerely protest against the indiscriminate extraction of any tooth, however offensive or troublesome. Every case should first be carefully examined and the effect upon the remaining teeth duly considered. We should learn to understand the laws of nature in the structure and development of the teeth, and use them to assist us in producing the symmetry and beauty of the features, and in preventing and correcting irregularities in their incipency.

ARTICLE V.

Concerning the Use of Dissimilar Metals in Filling a Tooth.

BY A. W. HARLAN, CHICAGO, ILL.

Since it is the fashion now-a-days for everyone, be he large or small, to have his ideas concerning the practice of dentistry aired in some publication, I trust that the readers of *THE JOURNAL* will allow me to offer them something which has not, heretofore, been much discussed; indeed I have been able to find but the slightest reference to it in the text-books on dentistry, and a pretty thorough search of the transactions of societies and periodical literature has disclosed nothing very valuable or scientific concerning what is to follow:

I have long entertained the opinion that it was not good practice to use gold and amalgam in the same tooth, whether the fillings were separated from each other or not. Observation has shown me that a great many dentists are in the habit of filling teeth in the above manner, and I have been endeavoring to collect a sufficient number of good reasons to convince them that it is not a very wise method of operating. I will first cite cases from my own practice, and then give my experiments on the subject.

March, 1870, filled large crown cavity and roots of lower first molar with amalgam; filled buccal cavity in the same tooth with gold; the metals did not come in contact. March, 1878, eight years afterwards, the buccal filling had to be renewed. Crown filling in good condition yet. May, 1870, filled upper second molar in the same mouth, distal cavity including roots, using amalgam; filled mesial cavity with gold. February, 1878, was compelled to refill the mesial cavity on account of the recurrence of decay around the filling. July, 1877, filled buccal cavity in lower first molar (alive) with amalgam, and crown cavity with gold. August, 1873, crown filling had to be replaced in order to save the tooth. August, 1871, filled distal cavity in upper

second bicuspid (alive) with amalgam, and mesial cavity in the same tooth with gold. September, 1877, renewed the mesial filling for the same reason that the others were refilled.

In the few cases where I have built gold up by the side of an amalgam filling I have found that as a rule *decay is likely to recur around the margins of both fillings equally*, and also where I have used amalgam to fill a cavity by the side of a gold the result was the same.

I ceased several years ago using two metals in one tooth, whether alive or devitalized, because I was convinced that one of the cavities would sooner or later have to be refilled. I was as much surprised to find that decay almost invariably attacked the margins around the gold filling, as any one of the readers of THE JOURNAL can be at my recording it, but such is the result of my observations, regarding my own operations and those from the hands of other reputable practitioners.

Now for the experiments: Selecting a perfectly sound tooth I filled the crown with amalgam and the buccal surface with gold, and suspended the crown in a solution of cider vinegar of one-tenth strength, allowing it to remain 48 hours. On removal it was very easy to scrape off the enamel around the gold filling, and an almost imperceptible amount of softening had taken place around the amalgam filling. Repeated the same experiment with a one-twentieth solution of vinegar, allowing the tooth to remain seven days with the same result precisely. Experimented once more, using this time a central incisor, the proximal surfaces of which were filled—one with amalgam and the other with gold, allowing it to remain suspended eight days in a one-twenty fifth solution, with no different result.

If these experiments and practical cases prove anything, it is that *we should not expect to save a tooth by using two metals in it, for the purpose of arresting caries*. We must not for the sake of economy or of shortening an operation fill an immense cavity with amalgam and a small one with

gold, but on the other hand, it would seem imperative that the dentist should fill both cavities with one material, whether it be of amalgam or of gold. I have been practising in this way since 1872, and have not, and will not fill a tooth unless I can use one metal for filling all the cavities in it. Without being sure of it, I may say that I believe no bad results need be apprehended from using tin and amalgam in the same tooth, or tin and gutta-percha or oxychloride of zinc, etc, but I do not use gold and tin in the same tooth when they are separated from each other by a portion of tooth substance, because the tin, if not worn out by mastication, is dissolved by the acid secretions of the mouth. I do not pretend to explain the reason why decay recurs around the margins of a gold filling when there is an amalgam filling in the same tooth, but will leave that to the experimenter with electricity.

With reference to the use of tin and gold in combination for filling teeth, I am of the opinion that if either of these metals are used honestly and thoroughly the result will be the same, that is to say, the tooth will be saved and its color will be better if the metals are used separately. I venture to hint that after the lapse of sufficient time—say three years, the combination fillings of tin and gold will begin to flake and become depressed on the grinding surface of the teeth, and the proximal surfaces turn quite black, which in both cases would be calamitous.

In conclusion it will not be presumptuous, I hope, to remark that the dentist who wishes to serve his patients best, will use his own judgment in the selection of materials for filling, and his own method for accomplishing the desired end, and at the same time not permit pecuniary considerations to come between him and the salvation of a tooth, remembering that it is better to save one tooth for useful service, than to miserably fail in saving a dozen teeth by following the advice or wishes of a patient, thereby confessing your want of firmness and want of judgment.—*Misouri Dental Journal.*

ARTICLE VI.

Chloride of Calcium.

Dr. Robert Bell thinks that this salt possesses much greater therapeutic value than has been accorded it, and though it has been crowded out by iodine and cod liver oil in the treatment of wasting diseases of childhood, he is satisfied it is often of incalculable service.

In tubercular diseases of the bone and joints of children, and in affections of the cervical glands, he has never met with its equal.

As it has been often suggested that lime is of therapeutic value in many cases where mal-nutrition (intra-uterine) is suspected,—cases where the anæmic condition of the pregnant woman would indicate the scarcity of lime salts, might not this salt, if as easily assimilated as Dr. Bell seems to think, be useful in such cases. We are more than ever convinced that the teeth of the coming and existing generations are of bad quality from defective intra-uterine nourishment, and if it be true that the chloride of calcium is assimilable as suggested, it is worth while to try it in such cases; and the more so if the doctrine taught be true, that the teeth of the fœtus are built up at the expense of the mother.

H.

ARTICLE VII.

California State Dental Association.

The Ninth Annual Session of the California State Dental Association will be held in San Francisco, June 4th, and continue four days.

Previous sessions have been of great benefit to the profession, and we confidently hope the coming one will equal, if not excel, in interest and usefulness, any that have preceded it.

It is expected that more time will be given to Clinical op-

erations than has been during former sessions, for by this means it is believed more may be accomplished than by any other.

The Elevation of the Profession is the first object we have in view, and it is earnestly desired that each member will feel that he should contribute to the common fund of knowledge, from which we may all freely draw.

That the coming session may be made one of unusual interest, you are respectfully urged to suspend Dental Operations in your office for a few days, and unite in an endeavor to make the Ninth Annual Session one of pleasure and profit to all.

WM. B. KINGSBURY,
Pres. California State Dental Association.

South Carolina State Dental Association.

The Eighth Annual Meeting of the South Carolina State Dental Association, J. R. Thompson, D. D. S., President, will be held in the city of Columbia on Tuesday, June 4th, 1878, at Half-Past 8 o'clock P. M.

There will be Essays, Discussions and Clinics; also a large assortment of Dental Material and Instruments, including the latest improvements, as per Resolution of last meeting.

The various Railroads are requested to pass Delegates at reduced rates.

The State Board of Dental Examiners will grant License to candidates who pass a satisfactory examination.

Executive Committee.—Dr. W. L. Reynolds, Dr. T. T. Moore, Dr. D. L. Boozer.

G. F. S. WRIGHT, *Rec. Secretary.*

American Dental Association.

The eighteenth annual Session of the American Dental Association will be held at Niagara, Tuesday, August 6th, 1878, and continue in Session four days.

MARSHALL H. WEBB, *Cor. Secretary.*

Southern Dental Association.

The Tenth Annual Meeting of the Southern Dental Association will be held at Niagara Falls on Tuesday, August 6th, 1878.

The change of place of meeting, from Atlanta, Ga., to Niagara Falls, has been deemed advisable for the purpose of joining the American Dental Association and the American Dental Convention, which meet at the same time and place; when an effort will be made to organize an American Dental Congress, or some sort of a truly national organization.

Committees of Conference have been appointed from the three societies for this purpose. These facts will enhance the interest, and probably secure a large attendance. An unusually interesting meeting may be expected and the profession is invited.

S. J. COBB, *President*,

E. S. CHISHOLM, *Sec'y*

Nashville, Tenn.

Tuscaloosa, Ala.

EDITORIAL, ETC.

The Newest of our Creeds, Is by Dr. J. Foster Flagg, seconded by Prof. Henry S. Chase and Dr. S. B. Palmer, (see April and May Nos. of this Journal.) It is to the effect that plastic fillings are better than gold, because of the incompatibility of this last substance with tooth bone. Galvanic currents and abundance of other first-class reasons are adduced as the cause as to why the gold will not do what the other fillings do—preserve the teeth of our patients.

In this new world of ours we are always making discoveries which overtop all that is past, and compared with which all

that has hitherto been found out is no more than as dust in the balance! Truly the facility with which some people change their opinions and creeds is only equalled by the agility with which the "hermit crab" slips out of his old shell into the new. The mighty champions of heavy cohesive foil, of crystal gold, of light cohesive foil, of mallets, &c., &c., after falling down on figurative knees and repenting of these sins and urging the necessity of doing their works over again, (in soft foil,) now come to the front once more after only a year's silence, and say, "*we have discovered!*"

In vain we point out to them that frail teeth have been kept for years with old-fashioned soft foil. In vain does the old operator exhibit teeth filled by dentists carefully forty years ago which are monuments of his patience and thoroughness, and point to teeth in the same mouth going to pieces because of defective gold fillings. In vain does he demonstrate that teeth are fractured by malleting, and that leaks occur under the unmanageable heavy foil. In vain—but why say a word? If neither separating or contour work saves teeth or arrests decay, if fillings do not stop its ravages, where is the utility of writing or working at all?

One thing all candid persons who have ever experimented with gold will acknowledge: *The best gold fillings are the most durable gold fillings.* Given a first-class gold filling and one of inferior quality, and even Dr. Flagg, seconded by Drs. Chase and Palmer will hardly say that that on which the most labor was spent is not most likely to serve the purpose for which it was inserted. If this be true—and the common sense of every man and the daily observation of every operator will confirm it,—it seems to our intelligence a sufficient answer to all this tirade for or against certain filling materials.

We have no objection to Amalgam. It is an excellent material for fillings. But we have, as a dentist, to say, that when a man stands up and utters as a truism that teeth are less discolored by it than when filled with gold, he is either wilfully misstating, or else he does not know what a good gold filling means. And we are more and more inclined to this last view of the case when we hear the ordinary talk about such work. Was it not Dr. Flagg who only a few years ago boasted of the

facility with which he could fill cavities in teeth with some variety of plastic or shred gold? "It only took two minutes!" he said.

But the world has many such. Men who, with "the latest thing out," are just ready to outdo all their previous achievements, and whose wonder is that anything was ever accomplished before their notable discoveries were made. We must be patient with them. If "he that follows must be behind," it is implied that the leader goes ahead, and in this case a long way ahead indeed!

For ourselves, we have made a good many departures from what was old-time orthodoxy. But we have never been better pleased with our own work or that of predecessors or contemporaries, than when looking over some very bad cases filled with the "old fashioned Abbey's Soft Foil, No. 4." True, it sometimes fails, but we are quite sure that the conviction which is forced upon us in such cases of failure,—a conviction that faulty manipulation was the cause of the failure,—was nearer the truth than any theories of incompatibility. But how many of this day and generation know how to put in an old fashioned filling of soft foil!

The Dental and Oral Science Magazine.—Notice of this new Dental Journal was made in our April number. We are glad to see this new competitor for position. It appears handsomely and if, as the prospectus states, it is to publish the proceedings of the New York Odontological Society *in full*, it certainly will not lack for matter—though we are puzzled to see how Mr. Williams, the publisher, will get all of this Society's voluminous utterances into the compass of the seventy-two pages of a quarterly. He will have to use smaller type than at present, and leave out his selections.

The announcement is made in the prospectus that "trade in all its phases will be rigorously excluded from its literary department, in which no puffs or advertisements of any business, any material, or any individual, will be allowed to appear." And it further states that "it is designed to give the new periodical as high a character for scientific professional literature as can be found in the journals of this or any other profession; and

to obtain this end, much must necessarily be excluded which, possessing merely local or temporary value, makes no mark on the record of professional excellence."

It is certainly difficult to understand how any fact in oral or dental surgery could possess "temporary or local value," but it may be that New York is cosmopolitan in this, as in trade; or is it that the New York Odontological Society is the oracle of the profession?

Besides the triangular "New Departure," by Drs. Flagg, Chase and Palmer, this number of the quarterly contains a very thoughtful and interesting article from Dr. Norman W. Kingsley, on "The Mechanism of Speech," and an excellent paper by Dr. C. A. Marvin, of Brooklyn, on "The Relation of the Science of Physiognomy to Mechanical Dentistry," a study which dentists might well profit by, for the good of their patients. But so long as artificial dentistry is assigned to boys in the laboratory, it is not likely that progress will be made, but rather retrogression.

H.

MONTHLY SUMMARY.

Gelsemium Sempervirens in Neuralgia.—The action of this drug in affections of a neuralgic character, says the *Medical Examiner*, has recently been studied by Dr. Emery-Heroguelle, who made it the subject of his inaugural thesis. A summary of his observations appeared in a recent number of the *Paris Medical*. Taken in a large dose gelsemium produces frontal headache, stunning, visual troubles, diplopia, contraction of the pupil, and dropping of the upper eyelid. There is also weakness of the legs. The author reports six cases of intoxication from this drug, taken in mistake. Gelsemium is administered in powder or in pills in the dose of three-fourths of a grain to three grains of the powder of the roots. It may also be given in the form of tincture, made with 100 parts of alcohol at 60° to 5 parts of the powdered root. The dose is from 40 to 80 drops. A syrup may be also made by adding 50 parts of the tincture to

1000 of simple syrup. M. Dujardin-Beaumetz has also had prepared an aqueous extract and an alcoholic extract. M. Emery-Heroguelle reports thirty-one observations collected in the service of M. Dujardin-Beaumetz, and from foreign journals, all of which refer to the action of the drug on neuralgia. From an analysis of the results, it appears that gelseminum may be especially looked upon as an anti-neuralgic; that it acts favorably in cases of dental neuralgia of the fifth pair, of the frontal, temporal, supra-, and infra-orbital nerves, the brachial plexus, the intercostal and ilio-lumbar nerves. Sciatic neuralgia appears to resist, rather more than other neuralgias, the calming effects of this tincture. Dr. Ortille, of Lille, however, succeeded in curing with this remedy a patient who had suffered for a long time from sciatica which resisted all sorts of therapeutic means. The author considers gelseminum to be a powerful sedative in neuralgia, especially in those varieties which are not accompanied by that local fluxion in the affected point. Favorable results have also been seen in hemicrania.—*Med. and Surg. Reporter.*

The Effects of Lymph on Cicatrization.—Professor Koeberle, of Strasburg, states that lesions or cuts intersecting the lymphatics are more difficult than others to heal by the first intention. Moreover, the lymph, easily becoming puriform, gives rise to the sanies which, infiltrating the tissues, occasions erysipelas, secondary hemorrhages, and other accidents consecutive upon a wound. This stagnation of the sanies is rendered evident by redness and pain occurring at some point in the line of the cicatrix. It then becomes necessary to allow of its escape by opening the wound at this point. Observation shows that in the middle line of the body, where there are few lymphatics, immediate union often occurs: and further, that longitudinal incisions, which do less injury to the lymphatics, heal better than horizontal ones. Professor Koeberle hence draws the conclusion that, when practicable, incisions should be made paralld to, and not across, lymphatic vessels.—*Med. and Surg. Reporter.*

Absurd.—The following under the title of "Source of Artificial Teeth," is going the rounds of Medical Literature:

"Proverbially, 'tis an ill wind that blows nobody good. The Eastern war illustrates this: The price of a human jaw at the seat of war in Bulgaria is, the *London Times* states, 10 francs, more or less. It varies according to the regularity, soundness, and whiteness of the teeth. In Paris, the quotation is fifty per cent. greater, at wholesale rates. The gastly wares are conveyed in cases containing five hundred, and the teeth are extracted after their arrival at the city to which the jaws are consigned."

On the Elimination of Mercury.—Dr. E. W. Hamburger, of Franzensbad, sums up a paper in the *Prager Medicin. Wochenschrift*, 1877, quoted in the *London Medical Record*, with the following conclusions:—

1. Mercury can be distinctly found in the urine of patients who have been treated with mercurial suppositories for some time. In one case, in which the treatment had been commenced four days previously, mercury was not found in the urine. Mercury is always present in the urine of patients who have been treated by inunction.

2. In patients treated with suppositories, mercury was always found in the milk as well as the urine. In cases of inunction, although mercury was present in the urine, none could be found in the milk; and, when mercurial inunction was substituted for suppositories, the mercury disappeared from the milk, although it continued to be present in the urine.

3. The fæces of a patient who was treated by inunction contained a large amount of mercury. Dr. Hamburger concludes, hence, that the elimination of mercury takes place chiefly by the bile.

The chemical process used consisted in the removal of organic matters, the application of electrolysis, and the formation of iodide of mercury, the crystals of which were readily recognizable under the microscope.—*Med. and Surg. Reporter.*

Relation of Brain Weight to Mental Ability.—Mr. C. Clapham says, in the last volume of the West Riding Lunatic Asylum Reports:—

"My observations agree with those of Wagner, that weight of brain does not indicate any close relation to intellectual power, and also that aboriginal races are not to be distinguished for smallness of brains. In fact, the ancient Britons, and I may add the ancient Gauls also, were remarkable for good-sized, nay, even large brains." This statement is borne out by the testimony of the most competent craniologists of the day.—*Med. and Surg. Reporter.*

Curious Development of Teeth.—Dr. L. E. Brayman, of Ohio, writes us:— My attention was called, the 30th of March, to a very peculiar malformation and unnatural development of the incisor teeth. Miss Alice G., of this place, has six incisors in the lower jaw, unnaturally flattened from side to side, and thick antero-posteriorly. In appearance they resemble the canine incisors, while on the upper jaw there are only two incisors, which are very broad, nearly filling the space between the canines. The jaws are somewhat flattened in front, but do not look very bad.—*Med. and Surg. Reporter.*

Statistics of Insanity.—In the Annual Report of the Pennsylvania Hospital for the Insane, for 1877, Dr. Kirkbride, the able superintendent, presents the statistics of 7663 cases admitted during the last 37 years. More than one-half (4248) were between the ages of 20 and 40. Of the three learned professions, 93 were physicians, 98 lawyers and 48 clergymen. As physicians outnumber lawyers more than two to one, and clergymen more than five to one, this showing is greatly in favor of the sanitary influence of a physician's life on the mind. Of the single females, 20 were daughters of physicians, 80 of lawyers, and 25 of clergymen—from which one might suspect that lawyers and clergymen, the latter particularly, transmit to their offspring a less healthy mental constitution. It is singular that a similar difference should appear among the wives. Of the married females, 25 were the wives of physicians, 49 of lawyers, and 32 of clergymen. Supposing the numerical ratio of the three professions in the community to be represented by the figures 1, 2 and 5, there would be 5 insane wives of physicians to 20 of lawyers and 32 of clergymen. Perhaps the hereditary tendency noticed among the daughters was on the mother's side. But why should the wives of doctors be more prone to insanity than those of the other professions? In the case of widows the proportion is somewhat reversed, 16 being widows of physicians, 16 of lawyers, and only 6 of clergymen.

Dangers from Salicylic Acid.—This is certainly a substance which should be administered with considerable caution. Several instances where it produced disagreeable consequences have been heretofore mentioned in these pages, and we note that Dr. Watelet communicates a paper to a late number of the *Bull. de Therap.* on this subject, entitled, "Accidents following the Administration of Salicylic Acid." The details are given of two cases of rheumatism treated by salicylate of soda, one of which was followed by gangrene of the lower extremities, and both by cystitis, obstinate constipation and coldness of the extremities.—*Med. and Surg. Reporter.*

A Case of "Replantation of the Teeth."—Ernst K., eight years old, while walking on stilts, fell down and knocked a central incisor entirely out, so that it had to be hunted for on the ground. After a long deliberation whether anything could be done with the tooth, the sister of the boy came with him to me for consultation.

The tooth was brought to me wrapped in a piece of paper; the roots were only developed to two-thirds of their full grown size and consequently the cavity of the pulp-chamber was still very large.

I cleaned the tooth carefully, by means of a syringe, with tepid water, cleaned the coagulated blood from the alveolus and pressed the tooth in as well as possible. In the absence of good gutta-percha, I heated some of Stent's composition and made a cap of it, covering the tooth in question and the adjacent ones, recommending forbearance of mechanic influences. During the following fortnight the cap was renewed three times and then dispensed with. Three weeks after the accident I found the tooth so solid in its socket that one would scarcely have believed that this tooth, three weeks before, had been about one hour out of the mouth.

It seems to me very remarkable in this case, that after the re-plantation, not a sign of inflammation or suppuration manifested itself, and that the tooth kept its color perfectly.—*Dental Office.*

The Treatment of Earache.—Dr. W. Cheatham, of Louisville, says, in a recent paper:

When a patient complains of earache, and on examination with the speculum the drum is seen to be red, it is good practice to turn into the ear a stream of water as warm as it can be borne. This is best done by the aural douche. Where this is not at hand, a Davidson's syringe may be substituted, first converting it, however, into a siphon. To do this, the vessel containing the water must be raised a short distance above the patient's head; the syringe then filled by compressing the bulb a few times, when, by lowering the tube, the water will continue to flow in a gentle stream, which is to be turned on the inflamed parts. A small rubber tube may be made to answer the same purpose. The douche, by whatever means affected, should be prolonged and often repeated.

Many cases of earache are met with, especially among children, which are relieved by having the patient turn the head well to the sound side, and pouring the ear full of very warm water. This may require to be repeated a number of times before relief is obtained, but in any event is always to be preferred to the various ear-drops, composed of laudanum, onion juice and the like. If this fails to relieve the pain, a leech should be applied a short distance inside the auditory canal, on its anterior wall; and when it falls away, the bleeding is to be encouraged by the hot water douche, or by flannels wrung from boiling water, industriously used for half an hour after. When the drum is found to be red and bulging, denoting fluid in the tympanic cavity, paracentesis should be immediately performed. The operation is exceedingly simple, and gives almost instantaneous relief. Should the fluid not flow as freely as may be desired, the patient is directed to practice Valsalva; or inflation should be made by Politzer's bag. In cases where the Eustachian tube is so entirely closed that air cannot be made to enter the middle ear, Seigel's otoscope, with very gentle suction, should be applied.—*Reporter.*

Food and the Human Body.—The basis of the science of food is in some degree uncertain. "No complete chemical examination of the total constituents of a healthy human body has yet been made," Prof. Church tells us, and the reason of this is obvious. We believe that in the course of the Franco-German war a number of soldiers killed in action were sent by the German authorities to an Italian laboratory. Whether the analyses were ever completed we do not know, but no results have been published. Meanwhile, we must be content with such approximations as have hitherto been made. It is probable that they are practically sufficient. The constituents of the human body, taking elements the names of which will be familiar to the general reader, rather than compounds, are 16 in number, seven of them being metals, nine non-metallic. The metals weigh altogether (11 stone, or 154 pounds, being taken as the standard weight of the whole body) something less than five pounds, nearly four of which are calcium, the basis of lime, supplying the chief part of the bones and teeth. Of iron there are 65 grains, a small amount, but very important, as giving color to the blood. Among non-metallic elements, oxygen is the most important, amounting to no less than 109 pounds; and next to this carbon, weighing not quite 19 pounds. Of phosphorus, which, if some physiologists are to be believed, supplies the motive power of the whole, there is 1 pound 12 ounces 25 grains. The weight of water in the body, to speak of compounds, not elements, is almost exactly the same as that of oxygen in the other list. The practical science of food is, of course, to keep up the supply of these substances to their normal quantity; and here comes in the function of chemistry, which, having informed us what there is in the body, tells us what there is in each of the substances we commonly use to supply its needs.—*Druggists Circular.*

Salicylic Acid as a Dentifrice.—Herr Gehrke advocates its use in mouth-washes. Herr Zader held as an opposite experience that it is not to be so employed. Herr Kleinman infers from his experience that it acts injuriously on tooth bone, although but little upon the enamel. Herr Wiermann believes that the acid finds its way quickly through the fissures of the enamel.

The question was asked by Dr. Arend, whether observation had elicited the constant association of ill consequences in the mouth with the use of this acid.

Herr Buschendorf could vouch for such ill influences, as far as the necks of the teeth are concerned. Herr Elmers had witnessed the association of pain as expressive of its irritating quality when applied to tooth bone and the dental neck. Herr Kleinman held it as a matter decided that the agent was corrosive to the teeth.—*Dental Cosmos.*

Tubercular Ulcer of the Tongue.—M. Nedopil remarks, that the diagnosis of secondary tubercula ulcer of the tongue is generally not difficult, in the presence of other indications of tuberculosis. But primary tubercular ulcer can often be scarcely distinguished from cancer unless a microscopic examination be made, while the failure of anti-syphilitic remedies denotes that the affection is not a syphilitic ulcer, which often has a similar appearance. The tubercular ulcer of the tongue runs a course resembling that of cancer. A small hard nodule on the edge or upper surface of the tongue, which is often overlooked, at last falls off and leaves a dirty ulcer with an indurated base, which generally spreads more slowly than a cancerous ulcer. Early extirpation is the only cure, and it may perhaps arrest the development of general tuberculosis. The author has observed four cases in Billroth's clinic; two of the individuals were thirty-two years of age, the others sixty-eight and seventy. In three cases the ulcer was extirpated, and healing took place in a few days. In the excised pieces the tissue around the ulcer was studded with miliary-tubercles, mostly towards the free surface. The morbid process appears to commence with a general transformation of the muscular tissue into a homogenous, slightly granular plasma containing proliferating muscle-nuclei. Later, the primary deposits become confluent, and giant-cells are formed from the obstructed portions of the blood-vessels; in some of these, Nedopil found cavities filled with brown pigment. The growth of the tubercle appears to take place partly through proliferation of nuclei (without cell-formation) in the interior, partly through metamorphosis of the neighboring tissue.—*British Medical Journal.*

The Cell and Protoplasm.—In a lecture recently delivered at the Royal Institution, Professor A. H. Garrod said that he believed the original idea of a cell, as first taught by Schleiden and Schwann, is incorrect. The use of the reagents they employed, to get clearness as they supposed, really brought about artificially those changes which led them to believe that a cell consisted of cell wall, cell contents, nucleus, and nucleolus. He would define as a cell a separate mass of protoplasm, whether surrounded by formed material or not. This formed material comes from the precipitation of salts of lime by the protoplasm and from the formation of hyaline, etc. In this way the tissues of the body are built up. In the growth of the epidermis, the cells are gradually more and more filled with precipitated matter, the protoplasm occupies less and less space, and finally the cells die and are removed from the surface. In fatty tissue, the hydrocarbons of the food are gradually precipitated in the cells till the protoplasm becomes only an investing membrane.—*Med. and Surg. Reporter.*

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ARTICLE I.

The Proximate Causes of Decay of the Teeth of Americans.

BY PROF. HODGKIN.

[Read before the Baltimore Society of Physicians and Surgeons,
May 2nd, 1878.]

MR. PRESIDENT AND GENTLEMEN.—At our last meeting I tried to show you as well as I was able what I conceived to be the remote causes of dental caries, and I trust that the views then presented are sufficiently fresh in your minds to obviate any repetition of them now; and I only refer to the fact that I summed up as the great cause of this malady, imperfect calcification of the teeth consequent upon imperfect nutrition in intra-uterine life.

This theory, while committing us in appearance to the doctrine that “as teeth are formed, so they remain,” only in fact commits us to an acceptance of this doctrine so far as the enamel is concerned—the question of nutrition of dentine is one which we need not discuss here. It is sufficient to know that the enamel is imperfectly coalesced and

that the open sutures or fissures left from incomplete blending of the points of calcification, leave open roads for the entrance of the active agents in causing decay.

You are aware of the fact that dentine has the property of further calcification, that is, that teeth become harder and denser as age progresses, that the fibrillæ calcify, and that the pulp decreases in size, calcific deposit occurring on its periphery. You are further aware that this is sometimes a physiological manifestation in the presence of pathological conditions—that decay is headed off by what the histologists have called the “zone of consolidation,” the unattacked substance of the tooth increasing in density, and forming a more or less perfect barrier to the encroaches of the disease outside of this barrier. But while all this is true of dentine, thus giving ground for the chemico-vital theory of decay, yet it is not at all true of enamel. For if the teachings of our physiologists be true, enamel is calcified from without inwardly—the enamel organ is on the outside of the tooth, and as a matter of course is dissociated with its after eruption.

But this is aside from the question of the “proximate cause of decay,” which is what concerns us more immediately. What are the agents which attack the hard vitreous enamel, burrowing into the dentine, penetrating to the pulp chamber, and devastating those beautiful structures, at once the ornaments of beauty and the agents of preliminary digestion?

We feel the importance of the answer to this question,—all of us,—although it should be that we stand powerless in the presence of this destroyer. To know what is the cause of the trouble is always a step on the road to its prevention. Is it a question of simple chemical action, or do vital forces have their play here? Is it true that teeth are attacked from without only, or is it true that they are insidiously sapped from within? We have no time here, nor is it the place to take up these questions in anything like a rigid investigation of their merits. Theories of all sorts have

been advanced. The simply chemical one, which finds in an acid condition of the salivary and mucous fluids, or corroding discharges from the gums; or of acids arising from the decomposition of the particles of food retained between and in contact with the teeth; or the return of corrosive elements, as chloride, bromine, &c., after administration of the salts of these elements, and their decomposition in the system, by elimination through the salivary glands. I simply mention these. A strong party finds in the fact that the teeth of pregnant females seem to decay faster than those of others not in that interesting condition, reason for belief that the teeth are robbed from within to supply the lime salts, the wants of the growing fœtus, or at least that they fail to receive nutrition. This theory of course assumes the nutrition of dentine. Another party find in the mysterious *leptothrix buccalis*, a microscopic parasite or fungus found in tooth-substance, a cause of decay, and some have seen, so sharp is human sight when prejudiced, these animalculæ burrowing their way into the depths of the tooth; and some have even suggested that the pain felt under the sharp excavator of the dentist is due to the disturbance of these creatures and their seeking refuge in the dentinal tubuli.

But enough of these theories, for as the tooth-ache is the most practical of facts, which neither the greatest savant or dreamy visionary can ignore, it behooves us to be practical, and to be practical we must be analytic, and know what are the substances acted upon, and what the forces and agents acting upon those substances. And you will all confess that the pain of a "raging fang" is practical enough, and the chairs and instruments of ours do not smack greatly of philosophy.

"Of all our pains since man was curst,
I mean of body, not the mental,
To name the worst among the worst,
The dental sure is transcendental."

And although we may make a joke of it, it is the grimest joke that man ever grinned at.

For a moment then let us be analytic and examine the structure of tooth-substance. The enamel is on the surface, is first attacked by caries, and we will take that up, as the most densely calcified structure of the body.

Very briefly, it is composed of long, slender, mostly hexagonal rods, or prisms, their inner ends resting on the dentine, and the outer forming the surface of the tooth. It is composed of "solid, slender fibres of phosphate, carbonate and fluuate of lime, the lime-salts constituting 99-100 parts of its substance. The remaining part is animal matter and water. I state this purposely that you may see that tooth-structure, at least so far as enamel is concerned, has no vitality, and as a consequence has no *vital* resistance to decay. The question then narrows down to a single general one—the chemistry of decay. Whatever part vital forces may play in other parts of the body, and whatever influence the repelling forces of nature may bring into requisition elsewhere, here it is certain that the action is simply a chemical one, and is this :

What agents will disintegrate lime salts? We have

Carbonate,
Phosphate,
Fluate of Lime.

The greatest proportion is phosphate.

The answer to the question is familiar. *Acids*. And it is a true answer, so far as our knowledge goes. That it does not account for all the facts in the case is possibly due to our want of perfect knowledge of the conditions. It does not seem to account for peculiar methods of progression in caries. It does not seem to account for the fact that teeth seem to decay in pairs (though this is partly accounted for by the theory advanced in my previous paper;) that when the proximal surface of one molar is decayed we may usually look for a corresponding attack of the fellow tooth opposite. It does not account for the fact that decay seems sometimes to be spontaneously arrested; is self-limiting; is stationary; is resumed.

If, as Claude Bernard said in answer to a querist, we could see to the bottom of this question we could see to the bottom of all others—we should know all truth.

We assume then that acids are the cause of dental caries. From whence came these acids, and what is the method of their action? and what acids are they?

We may consider the saliva first: It is well to consider this as a *mixed* fluid, the product or secretion of the parotid, sub-maxillary, sub-lingual and mucous glands. The books say that saliva is an alkaline fluid, &c. But whatever may be true of the saliva of typical man, we find that this *mixed* fluid is not alkaline usually, but acid. Out of 200 persons observed by one investigator seemingly in perfect health, 99 per cent. were found to have acid saliva except *just before meals*. These acids may be according to some writers, acetic, lactic, oxalic, uric, hydrochloric, nitric and sulphuric. It is certain that acetic, lactic, oxalic and hydrochloric have been found in the saliva; uric acid may be detected in the saliva in kidney troubles, and although nitric and sulphuric acids are not found, yet their presence is at least plausibly demonstrated. Sulphur is found in our food, as a proximate principle, and if the combination be dissolved it is set free, and in a nascent condition may readily form by combination with oxygen, sulphurous acid; or sulphuretted hydrogen, by union with hydrogen, and either of these I can conceive to be capable of being acted upon by other elements and sulphuric acid formed. The decomposition of nitrogenous particles of food may also by the liberation of nitrogen, allow of its combination with oxygen, and so the higher compounds of nitrogen and oxygen be formed.

Another and a prolific cause of dental caries may fairly be laid at the door of the medical practitioner. The administration of acid medicines is largely practised, and perhaps necessarily. But it is none the better for the teeth, that the administration is necessary. They are lost largely by this practice. It would be well to avoid whenever practicable the use of such drugs as tend to injure the

enamel by combining with its lime-salts. The condition of the mouths of many sick people is bad enough for their teeth, with vitiated saliva and acid eructations from the stomach, without these additional troubles from without. And if it be true that the elimination of bromides and chlorides from the system by the salivary glands is a cause of caries, it would be well to know this and if possible guard against it.

My patients ask me, why do not my lower front teeth decay? It is a fact that as a rule these teeth are exempt from decay, as you are all well aware, but I have seen no theory which satisfactorily accounts for their escape. They are as freely bathed in saliva as are the other teeth, and while it is true they are in some cases protected by incrustations of salivary calculus, yet this calculus is porous and and permeable to acids, and must be saturated by the vitiated fluids of the mouth. The theory that they are protected from acid medicines by the lower lip and tongue is unsatisfactory also.

I called attention in the previous paper, to the peculiar location of occasional decay in the lower molars of children. The lingual faces of these teeth, never, or exceedingly seldom attacked by decay in adults, are seen to be extensively excavated in children. This, I should judge to be due to some peculiar conditions of the sub-lingual secretions or possibly of the mucous membrane of the sides of the tongue. Is it not possible that some pathological condition of the nervous system might affect the character of the secretions of certain glands, and is it possible further that some reflex action of the fifth pair might cause its peripheral fibres along the sides of the tongue to stimulate the secretion of an acid mucus?

I am more and more impelled to conclude, as I reflect on the conditions of caries of teeth, that it is ordinarily determined in good part by the secretions of the mouth, rather than by the decomposition of food retained between the teeth, and I conclude so for the reason that we see that

the lower animals and inferior races of mankind are free from this affection, although under conditions which would, if the theory of food decomposition and its consequent acid action were true, be peculiarly liable to it, not possessing the means of tooth-cleansing of which we avail ourselves.

The question remains as to how far our vitiated tastes and abnormal habits influence the case. We see that the savage man is free from this affection, as are also the wild animals and even those which, though domesticated, preserve in tolerable distinctness their typical habits. How far does departure from a rigidly simple life tend to bring about this affection? Are we consuming proper food, and drinking proper fluids, and are we doing this at proper times and in proper quantities? To ask these questions is to suggest the answer. Scalding hot viands smoke on our tables, and seething and boiling liquids furnish our drinks. We bolt food which the domesticated and almost humanized dog drops with a howl, and we swallow with zest fluids which would scald our fingers. We pass in an instant from the tea and coffee at nearly 212° to ice water and frozen cream. We pile upon our food condiments which if applied to the external skin instantly produces irritation and soon becomes intolerable, and the stomach's walls and coats are supposed to be benefitted thereby. We are a nation of dyspeptics, a race who select—almost instinctively—food which does not require mastication and which is washed down without a particle of nature's lubricant, the saliva. We reject the natural forms of food, and insult natural tastes and appetites with leaven and yeast-powders, with diabolical messes of infernal cooking and of stomach-torturing mixtures. We reject the coarser foods, which natural man uses in large part, we use such food as does not require mastication, and as a consequence the teeth are not used; and there is strong reason for believing that the narrow jaw and contracted dental arch which is fast becoming typical of the American race, is due to a disuse of the jaws in childhood and a consequent lack of nervous flow to those parts. In a word, all

our habits are those of untypical man, and the organs which are exposed with no vital protection suffer,—suffer in development, in imperfect organization, in lack of use, in speedy loss.

But while all this is only part of the truth, we stand utterly powerless to prevent these causes from producing their effect. Men and women, old and young, will not forbear even in the presence of pain, or in view of the inevitable and known penalty of transgression. Knowing, they heed not, and as the Holy Scriptures truly say “My people will not consider.” “What has been, will be,” I suppose, to the end of time, and possibly the evolutionist who has so learnedly argued the probability of an edentulous man—made edentulous from disuse of his teeth—is right, and in the millions of *eons* to come, the race will subsist on a pinch of food carried in the vest pocket and the stomach become atrophied or possibly dwindle into only a continuation in size of the œsophagus. This should be the outcome of evolution.

Meantime the several millions of generations suffer, and *must* find relief. And so a profession has arisen—that of Dentistry.

I must not repeat what we all know so well, that no operation on the human organism is so uniformly successful as that of tooth-filling, nor need I inform you of what you are well aware, that thousands of teeth are sacrificed by a want of knowledge of this fact. Nor need I tell you that where these organs are lost and the last resort of extraction comes, that artificial substitutes are made which for perfection of imitation of nature's work are beyond comparison with anything artificial, unless it be the making of artificial flowers; that the sunken lips, the aged mouth, the changed features are restored, and rejuvenation given to the features “made after the divine image.” Nor need I tell you that these substitutes in addition to their wondrous naturalness of appearance, are so useful in mastication that dyspeptics are cured and appetites improved by their proper insertion.

All these are familiar facts.

It remains to give the sum of the results of the studies of the dental profession as to dental hygiene and prophylaxis; of the best methods of filling teeth, (not of course describing these methods,) of dental therapeutics and dental prosthesis. But as I am not writing a book, but only a brief paper, and as your time has already been encroached upon, and as I fear to be likened to the terrible dental engine which remorselessly bores, I stop.

ARTICLE II.

Dental Decay and Filling Materials Considered in their Electrical Relations.

BY S. B. PALMER, M. D. S., SYRACUSE, NEW YORK.

Mr. President, and Gentlemen of the Odontological Society.—Having had the honor of election to associate membership in your Society, and being permitted to take part in your deliberations and share your hospitalities, it gives me great pleasure to present to you the following thoughts and deductions, as a contribution to the fund of general professional knowledge.

In presenting the conclusions to which my investigations have led me, I desire to say that, like the experiments upon which they are founded, they are independent of all parties, sides, or "departures," as such; for I believe that from the moment truth is sought on only one side of any question, investigation in that case becomes untrustworthy. Still, I wish to subscribe to certain new doctrines which have, of late years, become public, since I know that they spring from researches conducted in the true spirit of science, and appear to me to be the legitimate conclusions to be derived from undeniable facts.

There seems to be a considerable opposition to these doctrines in the profession, which mainly, so far as I can see, arises from the fact that ideas have been developed and

reduced to practice through the agency of materials not heretofore considered as of the greatest utility or beauty. Yet the results of these ideas are too important to be overlooked, or derided. The idea seems to prevail that our new theories are founded upon the use of materials of an order too low to ensure such results as are claimed for them; and consequently, as it seems to me, opposition has been established without proper examination of the subject, and with still less effort to apply those materials where they are calculated to do the most good, namely, to remedy or abolish the failures incident to the best gold practice. It is to correct this state of misapprehension that I invite attention to those causes which render gold unreliable for use in chalky or poorly-calcified teeth.

At our meeting in November last there were presented ten "articles of faith," each of which comprehended much more of value than could be brought out in any single discussion. The result was, that the whole matter could not but be insufficiently considered, in the space of one meeting. As a text, therefore, for this paper, let me take the first article of that creed.

"Gold is the *best* material with which to save teeth." As I understand, this statement—bold, unqualified, dogmatic as it is—is copied from our text-books. I do not think the profession, as a rule, endorses this dictum. I rather believe that, to meet general views, it should be modified as follows: "Gold is the best material for fillings in cases where it is not incompatible with tooth-bone." Now, as opposed to this, we have the first article of the new creed: "In proportion as teeth *need* saving, gold is the *worst* material to use." This statement cannot be considered so sweeping as the one before quoted, for its very basis is an extremely important qualification. Moreover, while the first is as much, or more, the result of inheritance as of investigation, the second has been evolved from a long series of practical experiments, and depends for its verification solely upon admitted scientific truth. As the two now stand, they rep-

resent, not a contradiction, but the extremes of theory and practice as regards gold.

Teeth in a normal condition remain sound so long as there is harmony between the constituent substances of the teeth and the fluid media to which they are exposed. Any change in the latter, particularly if it produces an acid quality, is manifested by a softening or wasting of the surfaces of the teeth. This is a simple and well understood form of chemical action, and operates, as has been said, upon the whole exposed dental surface.

A second form of deterioration of tooth substance, is productive of cavities, through local action upon definite portions of a tooth or teeth. This usually occurs while the teeth and fluids are in a normal condition, through the lodgment and retention of particles of food or extraneous matters, until reaction or fermentation occurs in such places. This may be termed local, as the first instance may be called general, chemical action.

Here let me introduce, as corresponding to this local action, a simple form of galvanic battery; since we cannot conceive of chemical activity, however slight, without including the idea of a galvanic current. A tooth attacked by caries at a given point is like a battery cell containing the positive element alone—say zinc and an acid. In such a battery chemical action would be slow, with no manifestation of a current. In the tooth, the action which at first was simple soon becomes complex. When the lime salts are dissolved, the remaining cartilaginous portion corresponds to the porous cell of a Daniell battery. This comparison will, I think, aid in solving the question of why a tooth, having begun to decay, will sometimes cease that action altogether.

It was stated, in the discussions of the November meeting, that electricity has little to do with promotion of dental caries, and that we must look to chemical action for the causes of decay. Unless we can have a better understanding of the relations of chemical and galvanic action than is

implied by such remarks, further argument on this subject is useless. It is that relation which we must understand; for upon it hang all the principles and forces with which we have to contend. To illustrate my position on this question, let me use, as a figure, ordinary combustion in a furnace. The fire being lighted, the surrounding air is rarefied, and a current or draft is established. The consumption of fuel is determined by the supply of air. With a low chimney, and coal dust as fuel, little heat or power is developed. But, small as is this power, let it be applied to forcing more air upon the slow fire which created it, or upon other fires, and we see a great augmentation of power obtained. Now cavities in teeth, lined as they are with softened bone, well represent slow combustion. The undissolved portions resist decay partially. But introduce now any agent which will act more energetically, and this resistance is reduced to little or nothing, and decay progresses more rapidly.

Any material which will offer a perfect and complete protection from corroding agencies will effectually stop and prevent decay. In proportion as it lessens in the degrees of resistance, decay advances. This ratio of failure of resistance depends upon the capabilities of the material as a conductor of heat and electricity. Gutta-percha is almost a non-conductor of both.

Viewed as to extremes, there are two general principles on which decay is attempted to be arrested. One mechanical; the other chemical. The first is that which is by far the most generally employed, and is the only one recognized by many. It consists simply in the exclusion of fluids; for without moisture or fluid circulation there can be no chemical action. This principle involves the use of any filling material which will meet the given indications. The chemical principle is of use only where the mechanical fails to fulfill the requirements. From this it is apparent that we must know what the requirements are; and further, that we must learn what action is set up between various filling materials and tooth substance.

Let us construct three miniature batteries, consisting of three teeth with a cavity in each. The crown and enamel correspond to the cell, the dentine answering for the positive element. In this condition each battery has but one solid element and one pole. The softened bone attached to the sound walls offers resistance to the action of the oral fluids, and thus, in these bone batteries, the consumption of the positive element is slow. To put these batteries into active working order, it is necessary only to remove the resisting medium (excavate the cavity,) and supply the negative element in the form of poor and leaky fillings of gold, tin and poor amalgam. Now observe the results to be obtained from these batteries.

With batteries in action the current obtained is according to the differences of the elements. Thus, platinum gives better results with zinc than with copper, and with copper better than with tin.

In our tooth batteries, the gold element, according to both law and experiment, produces the strongest and most constant current, and therefore consumes fastest the positive element. This result is that which is desired in galvanic batteries for mechanical and other purposes, but is the very thing to be avoided in filling teeth. In fact, the introduction of any metallic filling, under the above conditions, excites chemical action which results in the loss of tooth substance, upon the principles above set forth.

The effect of such fillings in exciting decay is the same as that of a platinum plate when lowered into its place in a battery jar. The metal in both cases forms one pole, around and upon which is gathered electricity opposite in nature to that simultaneously gathered at the other pole. Thus is established a current, which obeys the laws of the electrical phenomena as well in the tooth as in the quart jar. The degrees of the currents in the different batteries differ in the following particulars.

Gold gives the strongest current because it is the best conductor. Its current is the most constant because the

metal does not oxidize or corrode. Poor amalgam at first acts in the same manner as gold, though in a less degree, because it is not so good a conductor; but, later, this poor amalgam becomes itself oxidized, and the current is then lessened. Also the metallic coloring matter thrown off by oxidation is received into the softened bone until the once positive element becomes neutral, or in the same electrical condition as the plug. This accounts for the endurance of the black teeth filled, long ago and even defectively, with this quality of amalgam. Tin is low in conducting power as compared with gold. It is, in fact, in nearly the same electrical condition as tooth substance. Therefore the slight current thus evolved is not sufficient to decompose saliva and render acid action continuous. On the contrary, the compound resulting from its oxidation does not destroy vitality and penetrate tooth substance, as does that formed by amalgam.

In conclusion, then, the assertion is made that a certain percentage of teeth which cannot be preserved with gold, can be preserved with tin. If facts support this assertion, we meet here a power which we cannot ignore in considering questions as to filling materials. I think it better to at once accept this fact and turn it to account than to argue against the inevitable. In its physical manipulation, gold has no equal as a filling material; but in its chemical properties it is wanting. I advocate the principle, and assert the fact, that gold and tin combined make a filling which meets the indications for beauty, and for preservation of tooth-substance. Our European friends have long since applied this principle, by rolling gold and tin foil together. Such fillings must preserve teeth, although in appearance and endurance they are no better than good amalgam. It is my practice to apply two or three thicknesses of tin foil to the softened walls of the cavity, filling the remainder of the opening with gold, as usual. While these fillings serve all the purposes of gold, the small proportion of tin does not produce discoloration. However, I

do not put in any claim for the discovery of a combination of tin and gold, in any form. I instituted my investigations for the purpose of ascertaining the action of filling materials upon the teeth. I am fully satisfied that my conclusions are supported by laws of nature which, at no distant day, will be known, recognized, and reduced to practice, in dentistry, to the improvement of the profession and the good of humanity.—*Dental and Oral Science Magazine.*

ARTICLE III.

The Metric System.

By order of the Surgeon General at Washington, the "Metric System" is ordered to be used in all Marine Hospital Service of the United States. A small pamphlet has been published for the guidance of those concerned, and from it we compile such facts relating to this system as may seem to be of interest to the general reader. As the "Metre," "Centimetre," &c., are now in somewhat common use, it is well to have before us in shape convenient for reference, a synopsis of the system.

RULES.

1. To Express Quantities by Weight of the Apothecaries' System in Metric Terms, or to Write Medical Prescriptions in Metric Weights.

RULE A.—*Reduce each quantity to grains; then divide the number by 10, (or move the decimal point one place to the left,) and from the quotient subtract one-third. The remainder is in each case the number of grammes representing (nearly) the same quantity. Or,*

RULE B.—*Reduce each quantity to drachms, and multiply the number by 4. The product is in each case the number of grammes representing (nearly) the same quantity, Or,*

RULE C.—*Reduce each quantity to ounces, and multiply the number by 32. The product is in each case the number of grammes representing (nearly) the same quantity.*

One gramme is equal to 15.43234874 troy grains.—(*Prof. Miller.*) In preparing the above rules the fraction has been ignored, as for medical and pharmacal purposes 1 gramme and 15 troy grains may be safely considered as equal quantities. In rule A, therefore, a division by 15 may, if preferred, be substituted for the division by 10 followed by a subtraction of one-third from the quotient, with the same result. The difference between 15 and 15.43234874 is $2.882 +$ per cent., and hence the deviation from exactness in the answer arrived at by either of the above rules corresponds to an excess of $28.82 +$ grains for every 1,000 grains. To illustrate: By Rule B, 4,000 grammes would be (nearly) equivalent to 1,000 drachms; but 4,000 grammes is equal to exactly 61,729.40 $+$ troy grains, while 1,000 drachms is only 60,000 troy grains. The deviation from exactness, therefore, in the answer arrived at by Rule B, (as also in the answers arrived at by Rules A and C,) is equivalent to an excess of $1,729.40 +$ troy grains for every 1,000 drachms, or about 14 grains for every ounce, or $28.82 +$ grains for every 1,000 grains, or less than 2.9 per cent.

To insure greater accuracy, if in any case deemed necessary, three per cent. may be deducted from the answer arrived at by either of the Rules A, B, or C. The deviation from exactness will then be reduced to one-fifth of one per cent., the remainder being less than the exact equivalent sought by only 2.04 grains for every 1,000 grains, or about one grain for every ounce.

2. To Express Quantities by Measure of the Apothecaries' System in Metric Terms, or to Write Medical Prescriptions in Metric Cubic Measures.

RULE D.—*Reduce each quantity to minims; then divide the number by 10, (or move the decimal point one place to the left,) and from the quotient subtract one-third.* The remainder is in each case the number of cubic centimetres representing (nearly) the same quantity. Or,

RULE E.—*Reduce each quantity to fluid drachms, and multiply the number by 4.* The product is in each case the number of cubic centimetres representing (nearly) the same quantity. Or,

RULE F.—*Reduce each quantity to fluid ounces, and multiply the number by 32.* The product is in each case the number of cubic centimetres representing (nearly) the same quantity.

One metre is equal to 39.370432 inches.—(*Capt. Clarke.*) Hence one cubic centimetre is equal 0.0610253868 — cubic inches, or to 16.2311678 + minims, (there being 61,440 minims in each wine-gallon of 231 cubic inches.) In preparing the above rules 1 cubic centimetre and 15 minims have been considered as equal quantities, which, for medical and pharmacal purposes, is deemed sufficiently accurate. In Rule D, therefore, a division by 15 may, if preferred, be substituted for the division by 10 followed by a subtraction of one-third from the quotient, with the same result. The difference between 15 and 16.2311678 + is 8.208 — per cent., and hence the deviation from exactness in the answer arrived at by either of the above rules corresponds to an excess of 82.08— minims for every 1,000 minims. To illustrate: By Rule E, 4,000 cubic centimetres would be (nearly) equivalent to 1,000 fluid drachms; but 4,000 cubic centimetres is equal to exactly 64,924.67+ minims, while 1,000 fluid drachms is only 60,000 minims. The deviation from exactness, therefore, in the answer arrived at by Rule E, (as also in the answers arrived at by Rules D and F,) is equivalent to an excess of 4,924.67+ minims for every 1,000 fluid drachms, or about 41 minims for every fluid ounce, or 82.08— minims for every 1,000 minims, or 8.2 per cent.

To insure greater accuracy, if in any case deemed necessary, 8 per cent. may be deducted from the answer arrived at by either of the Rules D, E, or F. The deviation from exactness will then be reduced to less than one-half of one per cent., the remainder being less than the exact equivalent sought by only 4.49— minims for every 1,000 minims, or less than $\frac{1}{24}$ minims for every fluid ounce.

The important advantage of a simple relation between the units of weight and the units of measure is acknowledged, and is one of the strong arguments in favor of the metric system, the weight unit or “gramme” being the weight of one cubic centimetre of distilled water of maximum density:

under the pressure of one atmosphere. The minim and the grain, however, have no simple relation to each other; but as the difference between the weight of one minim of distilled water of maximum density under the pressure of one atmosphere, and the weight of a troy grain, is comparatively small, it has been ignored entirely in preparing the rules for the conversion of apothecaries' measure into metric measure, (Rules D, E, and F,) and hence the arithmetical processes in the rules for converting old measures into new are respectively identical with the processes given in the rules for converting weights, as will be seen upon comparison of Rule D with Rule A, Rule E with Rule B, and Rule F with Rule C. For this purpose one minim is considered as weighing one grain, one fluid drachm as weighing one drachm, and one fluid ounce as weighing one ounce.

It will be seen that if the three Rules A, B, and C, be all applied in converting the several quantities by weight in any one prescription or formula, *the original proportions between these quantities will still be preserved*, the deviation from exactness being invariable. It will also be seen that the three Rules D, E, and F, may be all applied in converting the several quantities by measure in any one prescription or formula *without disturbing the original proportions* between said quantities. Thus, if all the ingredients in the formula be expressed by weight, or if they all be expressed by weight, or if they all be expressed by measure, the rules given may be employed indiscriminately without changing the character of the formula in the least. But if in any one formula both weights and measures are used together, then the proportions between the quantities by weight and the quantities by measure will be changed, so that, in the metric formula, constructed according to the rules given, the measured quantities will be about five per cent. larger in proportion to the weighed quantities, the deviation from exactness in the measures being an excess of eight per cent., while in the weights it is an excess of only three per cent. Thus, if a prescription for one grain of a strychnia salt dis-

solved in four fluid ounces of water, be converted into metric terms by the application of these rules, the metric formula arrived at would give us a solution *five per cent. weaker*, which is an absolutely insignificant difference.

In applying the foregoing rules for writing prescriptions, the metric quantities should be adjusted so as to be expressed in as simple decimal terms as may be practicable, without materially changing the dose or the character of the formula.

The terms "gramme" and "cubic centimetre" might be abbreviated "*Gm.*" and "C. C." To preclude the possibility, (in *careless* writing,) however, of mistaking the sign "*Gm.*" (gramme) for the sign "*gr.*" (grain,) the number should invariably precede the sign, using the common Arabic numerals. Thus, while ten grains is always written "*gr. X,*" (Roman numerals being used,) ten grammes would be written "*10 Gm.*" When the term "centigramme" is used it should be spelled out in full. Ten centigrammes might, however, more conveniently be written "*0.10 Gm.*" than "*10 centigrammes.*" In writing, the abbreviated metric denominations should always be underscored; but the preceding number should not.

Two examples will suffice to illustrate the foregoing rules and suggestions. The following prescription—

R: Extr. Coloc. Comp., 3 ias. Extr. Colch. Acet., gr. xii.
Extr. Digitalis, gr. vj. Make into 24 pills—
would in metric terms, be written:

R: Extr. Coloc. Comp., 6 *Gm.* (See Rule B.) Extr. Colch. Acet., 0.8 *Gm.* (See Rule A.) Extr. Digitalis, 0.4 *Gm.* (See Rule A.) Make into 24 pills.

Or, in a more finished decimal manner:

R: Extr. Coloc. Comp., 7.50 *Gm.* Extr. Colch. Acet., 1 *Gm.* Extr. Digitalis, 0.5 *Gm.* Make into 30 pills.

And the following prescription—

R: Potassii Bromidi, ʒ i. Elix. Aurantii, fl. ʒ viij. Mix.
would, in metric terms, be written:

R: Potassii Bromidi, 32 *Gm.* (See Rule C.) Elix. Aurantii, 256 C. C. (See Rule F.) Mix.

Or, in a more finished decimal manner:

R : Potassii Bromidi, 30 *Gm.* Elix. Aurantii, 250 C. C. Mix.

The exact equivalents of the grain, drachm, and ounce, (troy,) in grammes: of the gramme in grains; of the minim, fluid drachm, and fluid ounce in cubic centimetres, and of the cubic centimetre in minims, are as follows:

1 grain, troy, is equal to 0.065—grammes. 1 drachm, troy, is equal to 3.888—grammes. 1 ounce, troy, is equal to 31.103+ grammes. 1 gramme is equal to 15.4323487+ grains, troy.—*Prof. Miller.*

(1 avoirdupois pound is equal to 453.592+ grammes.) (1 avoirdupois ounce is equal to 28.350+ grammes) 1 minim is equal to 0.062—cubic centimetres. 1 fluid drachm is equal to 3.697—cubic centimetres. 1 fluid ounce is equal to 29.573—cubic centimetres. 1 cubic centimetre is equal to 16.231+ minims. (1 metre is equal to 39.370432 inches.—*Capt. Clarke.*) H.

ARTICLE IV.

The Influence of the Cheeks and Tongue, and the Lips and Tongue on the Gums and Jaws.

BY O. SAUER.

[A TRANSLATION.]

The pain following extraction of the teeth, upon which I published a paper in the year 1874, in the *Deutsche Vierteljahrsschrift für Zahnheilkunde*, has given me occasion to make further observation of known physiological processes, and the influence exerted by the lips and tongue, and cheeks and tongue, upon the gums and alveolar ridge. I take occasion to present the following short consideration of pain after extraction.

Pain immediately following extraction of teeth deserves our special notice on account of its severity; it is sometimes much more severe than the toothache was before extraction.

For us dentists it is all the more important for the reason that patients believe that we are to blame for it. We must therefore give it our closest attention. Heretofore we have been quite powerless against it. We looked only to the irritation of the broken nerve in the maxilla or an induced ostitis as the cause. The pain might arise from these causes but in my cases ostitis only has occasionally been present. I have always found the seat of pain in the border of the gums corresponding to the edges of the alveoli. The gums always rise above the bony walls of the alveoli, and in these cases the pain arises as soon as the gums are pressed against these margins. There is no pain in the alveoli. As in these cases there is little or no blood clot, I unite the absence of this with the painful gum at the alveolar margin, for in such a case I am of the opinion, that there being no counteracting pressure from within the alveolus against the tongue and cheeks, or the tongue and lips, these press the gums in over the sharp alveolar borders and thus give rise to inflammation.

A few days pass during which patients suffer without seeking aid, and then it is found that the margins of the gums are so bent over the alveolar processes from either side that they almost touch. Occasionally the pain comes on soon after extraction; this seems to arise from the inflammation of the gum about the diseased tooth before extraction; this is seen especially in cases of pericementitis. In such cases it is easy to understand how the inflamed gum may quickly become painful under the direct action of an irritant. We may also understand how the gums alone may become painful without the necessity of attributing the cause to a broken nerve in the many cases of exceeding painfulness of the gums that may be induced about a loose piece of a root. In such cases we certainly cannot attribute it to an injured nerve.

The treatment of pain after extraction should be upon the above theory. Remove the hurtful influence of the tongue, lips and cheeks. In the milder cases this may be

done by filling the socket of the tooth with loose pledgets of cotton. These have been made use of heretofore but they were saturated with iodine, laudanum, etc., and it was supposed that the benefits were derived from these medications. If the pain be great, over-capping the gums so as to ward off the lips and tongue will be beneficial. Together with plugging the alveolus, a cut in the gums, corresponding to the border of the process will be found useful—this seems of value when ostitis is also present; by this course the gums are scarified. I also use moist warmth as an aid in the treatment.

The unpleasant influence of the movable parts of the mouth on the gum, in the manner above described, is best observed after the extraction of the lower wisdom teeth. This may also be shown in many cases besides at the margins of the gums on the borders of the alveolar processes—sharp cusps of teeth under the gums—breaks in the alveoli, and bony borders after resection show it very often, as do foreign bodies in the gums, as fish-bones, broken pieces of tooth-picks, etc. Calculus may also be an occasional cause.

Cases of pain following the extraction of the wisdom teeth have, on account of the great movableness of the neighboring tissues, directed me to the observation of this class of cases, and aroused me to prosecute their study. It was through this that I came to connect the cause of pain after extraction, and the cause of the pain which occurs so frequently in the cutting of the wisdom teeth. It is my opinion that the wisdom tooth does not cause pain so much by pressure upon the gums in its effort to pass through, as heretofore supposed, as by the dragging of the gums across the cusps of its grinding surface. In this view of the case a cross cut down to the grinding surface, or a removal of the gums over the tooth, will be of advantage. By this means the neighboring soft parts will be prevented from dragging and pressing the gums against the cusps of the tooth. Of course this does not include those cases in which trouble arises from pressure against the next tooth in front.

I also hold that in the cutting of the milk teeth severe inflammation of the gums may be caused in the same manner as in the cutting of the wisdom teeth.

The coming of the permanent teeth sometimes suffers irregularity which I ascribe, at least in part, to the influence of the lips, cheeks and tongue. In the shedding of the milk teeth it is the rule that they fall out, or are removed as soon as the coming permanent tooth is level with the gums. The front teeth show themselves, as a rule, just behind the milk teeth, the back teeth immediately beneath them. The irregularity of which I have spoken occurs only in case the milk teeth fall out before the permanent teeth have reached the height of the gums. This premature shedding I ascribe to fungous growths of the gums, which I believe to be caused by pressure against the edges of the absorbed surface of the milk teeth, which in these cases grow in under the milk tooth and loosen it prematurely; finally the fungoid growth entirely breaks up the slight hold of the milk tooth and causes it to fall out. At this time the permanent tooth has reached the height of the bony border of the alveolus beneath the gums. After the loss of the milk tooth the gums close quickly over the coming permanent tooth; within two or three days only a slight slit is seen over the coming permanent tooth, which is already beginning to unite, through which a sharp instrument can scarcely be passed without injury. The lips and tongue have here induced a condition which retards the cutting of the permanent teeth. In the shedding of the milk molars we find in such cases the gums stretching like a band from the prominences of the alveolar border on either side across between the adjoining teeth.

If in such premature shedding of the teeth, the neighboring teeth, on one or both sides, have been exchanged, then it may happen that these take too much room and the new tooth which comes through later, not finding sufficient room must take a wrong position. Heretofore we have done nothing to correct this, probably because it was supposed

that the tooth was not sufficiently developed to come forward ; this however is not the case. In such cases we often see the corresponding tooth on the opposite side, which has not been retarded by the gums, taking its place in the arch. As the development of the corresponding tooth is usually equal, we must suppose that the retarded tooth is equally well developed.

The treatment is very simple when the cause is understood. I hold the borders of the gums open by a tent of cotton ; occasionally I make room by a cut and prevent its healing by the use of tents. If the coming tooth be overgrown by a band-like gum, I cut this through and cauterize it with nitrate of silver and also introduce tents ; the wound must be kept open for some time. Since adopting this treatment I have been surprised to see such teeth coming rapidly forward.

We occasionally see a milk tooth still remaining in the row of permanent teeth in persons who have passed the time of shedding. The corresponding permanent tooth has, from some cause—as its position—been held back in the maxilla. Hitherto, if such a milk tooth was removed for any reason—as on account of pericementitis—we gave ourselves no trouble about the retarded permanent tooth, especially if there was sufficient room in the arch for it to come forward. After the observations I have made as to the cutting of the permanent teeth at the time of shedding, I notice closely the roots, and also the alveolus of such teeth, and if I find the least absorption of the root, or can feel in the depths of the alveolus the crown of the delayed permanent tooth, I hold the alveolus open by tents.

There have been cases in which the jaw had remained toothless for years, and in which at last a retained permanent tooth made its appearance. I have observed two such cases. In these I saw the belated permanent teeth come through the gums in persons 35 and 40 years old, and who had worn artificial teeth on toothless and rootless gums for 5 and 10 years. These teeth were, in the one case, a cuspid,

in the other a right superior bicuspids, each of which came through the gums and assumed its proper position in the mouth. I ascribe the final eruption of these belated teeth to an irritation of the gums which had extended to the peridental membrane. The bone was brought to a condition favorable to the coming forward of the retained teeth, perhaps through growth of its spongy parts. In both of these cases the irritation seemed to have been caused by the base of the artificial teeth, partly through its movements in chewing and partly through the continued influence of the tongue, lips and cheeks.

The disappearance of the alveoli, and the closure of the gums over them may also be ascribed in part to the influence of the cheeks and tongue. The alveolar borders are in this wise pressed together and the gums pressed over them until they come together and unite. After the disappearance of the alveoli the alveolar ridge takes—under the influence of the tongue, lips and cheeks—a V or roof shape. In toothless mouths this is especially noticeable in the lower jaw. Here the tongue and cheeks are continually lying against each other. In the upper jaw the form is correspondingly more rounded. The roof form (sharp ridge) in both upper and lower jaw is seen more in the position of the back teeth, while it is more rounded in the position of the cuspids and incisor teeth. The cause of this is to be found in the position of the tongue, which lies more in the deeper parts of the month, and is brought less forcibly against the lips.

By the unequal pressure of a poorly fitting denture on the lower jaw, the union of the cheeks and tongue with the jaw, at a point corresponding to the back teeth, can be considerably raised up; it may be owing to the inclination of the patient to avoid this unnatural pressure by means of his cheeks and tongue, *i. e.*, drawing them backward. The cheek and tongue then form a fold or flap that covers the jaw. A well fitting plate, worn patiently, can force this covering back into place. The plate must be worn from a month to a year, or even, it may be, for a longer time. By

the help of the plate the soft parts give away, allowing it to rest upon the unusually shrunken jaw. This point of union, then, is found to be lower down, or, in its normal place. The base of the denture must, of course, be now renewed. According to this we must admit that the use of a well fitting set of teeth, can both hinder an immoderate shrinking of the jaw, and oppose a too great influence of the cheek and tongue.

The object of this paper is to point out how manifold changes may be brought about by the influence of cheeks and tongue and lips and tongue in certain conditions of the gums and jaws, and to recommend further observation and reporting of cases of this nature.—*Missouri Dental Jour.*

ARTICLE V.

Restoration of the Inferior Maxilla after Removal.

[Reported by Prof. J. B. Hodgkin, Baltimore College of Dental Surgery.]

Dr. George B. Reynolds, Visiting Physician to "Bay View Asylum," and formerly Resident Physician of the Washington University Hospital, presented to the Class of the Baltimore College of Dental Surgery, Willie —, aged eleven years, the child of German parents, for exhibition and remarks.

Dr. Reynolds said: The case before you, young gentlemen, is one of great interest, not only from its history, but from its rare occurrence. It is a case of necrosis of the lower maxilla, its successful removal, and the subsequent reproduction of that bone.

I need not explain to you the nature of necrosis of bone, and will only allude to some of the causes of the death of this bone under discussion. They may be from accident, as from blows upon the face, fractures, &c.; the malady known as the phosphorus disease, to which those who work in match factories are most liable; extensive mercurial salivation also may cause necrosis of this bone. It seems, some-

times, also to arise from causes which we call idiopathic, or, so to speak, of itself, having its origin in some depravity of the constitution.

Now, whether the case before us was a case of necrosis arising from mercurial salivation, or whether it arose primarily from some vice of this boy's constitution, some taint of the blood, it is difficult to decide; and though there are reasons for suspecting the first-named cause as bringing on the disease with its formidable results, yet I should rather be inclined to regard the case as one in which there exists a tendency to trouble—a condition of affairs only requiring occasion to develop the latent evil.

The history of this case is somewhat obscure. When Willie —— first fell into the hands of Dr. H. B. Trist, who was then Professor of Anatomy in the Washington University School of Medicine, and myself, he had been ill for some time. His whole face was much swelled, indicating great inflammation of the parts, and there were seen three or four fistulous openings about the angle of the jaw, upon the left side, and down upon the neck, much such sinuses as you would see in suppurating scrofulous cervical glands. The fœtor from these discharging openings, and from others within the mouth, was so offensive that those having charge of him had left him to himself as far as possible, and he was the sole occupant of his room. He was in a most deplorable condition of general health, emaciated and worn down—his whole system so run down as to render the recovery of his health a problem, even should he be so fortunate as to get rid of his local disorder—the necrosed maxilla. You will understand that with all these outwardly discharging ulcers, and a still larger number discharging within the mouth, the pus being unavoidably swallowed with his food, and the constantly inhaled fœtor, that his condition was as deplorable as could well be.

The previous history of the case was so obscure as not to throw much light on it. The first notice, his mother says, of anything wrong, was a twisting of his mouth to one side,

a condition we all recognize as facial paralysis, a lesion of one of the seventh pair of nerves. But we have no knowledge as to whether some previous lesion of the bones of the face had brought this trouble on by reflex action, or whether this was really the initial point of the subsequent serious trouble. Soon after this, he is reported as having been sick, and a doctor gave him some "whitish-grey powders" (most probably calomel, as there was the peculiar mercurial fœtor in the breath,) and that afterwards he had some trouble with his teeth, and that a dentist had extracted one or more. Then the trouble came on, in the depths of which we found him, as above stated. Had this dentist the acuteness that should characterize your profession, and could we find him now, he might throw some light upon this history; no one knows who he is, nor is it probable that his observations went further than the teeth to which his attention was called.

Our diagnosis of Willie's case was, that there was necrosis of the lower jaw, and in extent it seemed to comprise almost the entire bone. An operation was clearly indicated. It was absolutely necessary that the dead bone should be removed, but it was manifestly impossible to do this in his present physical condition, with his health all broken down; for such an operation he had not sufficient strength. Accordingly, he was put upon iron (the muriated tincture,) quinine and cod-liver oil, and these were used so successfully, that in a short time we had the satisfaction of seeing his appetite returning, his strength improving, and the whole constitution being renovated.

A most interesting question now arose as to the method of getting rid of the diseased and dead bone. The ordinary method of procedure is to remove it from without, an operation of formidable magnitude, involving the severance of the facial artery, and making a ghastly wound, and leaving an equally ghastly scar for life. And the idea was suggested, "can we not remove this dead bone from within, and by piece-meal, instead of at one operation?" This latter plan

was adopted, and so successfully, that, at intervals extending over nearly a year, pieces of the bone were removed, as the case seemed to require it; removing the sequestra as they separated, making; for this purpose, incisions in the gum overlying the jaw. All this took a long time. As I have said, we were, perhaps, a year in getting out these pieces which I show you. The bone required amputation at the right angle of the jaw, and a little dissecting out at the left articulation. You observe from these pieces (and there are a good many of them, from very small spiculæ to this large piece, which includes the left ramus and candyle) that all the parts are crowded and honeycombed by the pus in which they were bathed so long. The sloughing had pretty effectively separated the bone from the soft parts.

So much for the history of the operation, and I only add that the soft parts healed readily.

But when I come to speak, as I now do, of the wonderful after-results in this case, you will understand why I class it as one of exceeding rarity. You all see for yourselves that the bone has been reproduced—that the boy has now a new jaw. True, the bone is somewhat smaller, and the chin a trifle shorter than before, and, as a matter of course, there are no teeth, save the solitary second right lower molar, which was left with the old bone of that side; and as the teeth anterior to this were erupted at the time of this operation they were removed also, and you see some of them in the bone I show you. The articulation of the candyle is perfect in its socket—there is no stiffness, no ankylosis—in a word, the jaw, except as to diminished size and length, is perfectly reproduced.

If I had any comment to make upon this case, I would simply say that you have here an evidence of the wonderful reparative powers of nature, and that these reparative powers seem nowhere so strongly marked as in recovery from injuries of the facial bones; and we see further, that the best surgery is to get out of nature's way—keep from interference with her—help her simply by removing obstacles; and that we should not despair of the most hopeless cases.

My friend, and your Prof. Hodgkin will now talk to you on the part of the case that falls into his specialty, and discuss the question as to whether the boy can have artificial substitutes for the lost teeth. The boy, as you see, looks to be in good health, and is fat and rosy.—*Va. Med. Monthly.*

ARTICLE VI.

Requisite Knowledge for the Practice of Dentistry.

BY FRANK M. ODELL, D. D. S., M. D.

Read before the First District Dental Society, S. N. Y.

One gentleman asks: "Who can talk upon such a subject? What is there that anyone can say upon such a subject, to set the ball in motion? Ten chances to one, it will resolve itself into some remarks upon the way to prepare amalgam."

Another soliloquized: "The whole thing can be told in two words,—Every thing! Every thing is proper knowledge preparatory to the practice of dentistry, and no kind or amount of instruction and experience comes amiss."

According to my view of the matter, the second querist is not far out in his reckoning; but the vagueness of his mode of expression, only serves clearly to show in what a sea of protoplasm we are floating; and in the hope that I may be able to poise the ball aforesaid, and initiate its propulsion in a proper direction, I have collected a few thoughts upon paper.

The subject before us revolves itself into a question (for it is hardly to be supposed that we have assembled to-night to dogmatically *pronounce* what must be regarded as such "requisite knowledge," and to send forth our pronouncement, with the seal of this Society upon it, in the expectation that all practitioners and Societies will meekly bow their acquiescence:) What is the requisite knowledge, &c.?

Whilst agreeing with the second opinion, as far as it goes, I am still of the opinion that we may be able to get at a

more practical answer to our query; and, as is usual with me, I will begin in the middle, and take up the second idea, which presents itself first.

Anatomy, at least of the teeth and their surrounding alveolar processes, must, as a prime necessity, be practically familiar to the dentist; for how else can he decently extract, or excavate a cavity in a tooth?

A smattering of Pathology, sufficient to diagnose the various conditions in which suffering humanity comes under our notice;

A sufficient acquaintance with the Therapeutics of dentistry to be able to exhibit understandingly the most common remedial agents;

An insight into the most superficial laws of Philosophy and Mechanics, to enable one to perform the various operations in which we are wont to expend our energies;

Sufficient acquaintance with Chemical and Electrical laws, to enable us to study compatibility, and avoid at least proximity of incompatible agencies or materials employed in the mouth.

All this and more, it will readily be conceded, is requisite knowledge, before we can be fitted as the merest apologies for dental practitioners.

But preparation for practice in the higher walks of our profession, requires that the foundation-stones of the structure be laid broad and deep; that the anatomical knowledge extend to the whole structure of man not only, but embrace comparative anatomy likewise; and that it be not satisfied with any superficial knowledge, but include that of the vascular and neural systems; that even here it pause not, but dip deeper and deeper into minute anatomy, until even the powerful aid of the microscope fails (inasmuch as we learn thereby only what *comparative* observation can teach,) and the aid of the study of Embryology has to be invoked, in order that we may know how to assist in building up tissue, as well as in tearing it down.

Our knowledge of Pathology, if extended to the outer verge of what is known in general medicine, can be pro-

ductive of only good to our patients, whose general physical condition is often indicated very clearly, and sometimes preceded, by indications and conditions readily seen by the observant dental practitioner.

In a Therapeutical direction, we have by no means plumbed the depths of possibilities. Who can tell what application, not antagonistic to protoplasmic integrity, to make to sensitive dentine, or to the intensely vibrating odontoblasts at the exposed neck of a tooth, where even the touch of the cheek, tongue, or finger-nail, is so excessively painful?

We are expanded reservoirs of naked facts; and, as yet, can give no solution of a query as to causes.

"Requisite—knowledge—for—the—practice—of—Dentistry." I am almost led to a complete indorsement of the second opinion quoted at the commencement of this article, that it embraces every thing; for, when we examine it from any point of view, Medical, Mechanical, Social, Aesthetic, we find no field which does not yield a harvest for the dental student to reap.

And all these departments of knowledge, if faithfully worked up, and fully represented by appropriate ganglionic-bodies within the compass of any one organism, will still fall short of completing the *requisite knowledge* for the practice of dentistry, unless carefully guided by *good judgment*, and that most uncommon thing, *common sense*.—*Dental Miscellany*.

ARTICLE VII.

Anæsthesia by Rapid Respiration.

Dr. A. H. R. Guiley writes to the *Medical and Surgical Reporter* as follows:

The writer's thesis, under the above title (written July 6th, 1876,) was awarded the "J. M. Toner gold medal," at the commencement of Jefferson Medical College, Philadel-

phia, March, 1877. "Bonwill's method" was carefully investigated, and the results and conclusions were given in the paper alluded to, from which the following remarks are principally derived.

Dr. Bonwill's method is described in *Pennsylvania Journal of Dental Science*, for February, 1876. He found that air, "drawn into the lungs, in quantities three or four times as great as required by the body," was capable of producing anæsthesia sufficiently profound to render minor surgical operations painless. Dr. Bonwill could only account for the anæsthesia by giving the credit of its production to a super-oxygenation, or a surplus of nitrogen, or to a mixture of the two. The author concluded, from numerous experiments, that—

1st. Breathing full, at ninety to the minute, will produce anæsthesia of the surface of the body in less than five minutes, so that a pin or needle thrust half an inch into a limb is not felt. (This is Bonwill's method.)

2d. This anæsthesia is not due to "a surplus of oxygen or of nitrogen, or of the two combined," but follows from the rapidity of the breathing, according to laws certainly known since the beginning of this century.

3d. The rapidity of the breathing induces the anæsthesia by the following sequence:—

(a) By their over-action the blood of the body is determined toward the lungs. [Any muscle or organ violently exercised for a short time, receives a surplus of blood; a well-known fact.]

(b) The blood having assumed this centripetal determination leaves the surface of the body.

(c) When the surface of the body is deprived of its blood, superficial anæsthesia supervenes. Wardroff, in 1819, produced anæsthesia for surgical operations by venesection: until the surface was completely blanched. (See Gross' Syst. Surg., Vol. 1, p. 575. Sec. ed.) Within a few months superficial anæsthesia has been produced by the application of Esamarch's bandage, rendering the parts anæmic.

In fact (c) might be made more general, as—

(d) A part completely deprived of communication with the trunk by blood supply, or return, will be anæsthetized. But (d) is not necessary, from the fact that for an amputation, the surgeon will depend on an established anæsthetic. The complete withdrawal of the blood from a part involves an anæmia of the nerves, which probably is the direct cause of the anæsthesia.

With these facts before him the experimenter can account for the congestion of the lungs; the tingling first felt at the extremities and extending toward the central organs; the labored action of the heart; the clammy sweat and cool surface produced by Bonwill's method. He will also understand the return of the natural status after the discontinuance of the rapid breathing.

The fact that the lungs and central organs have the blood of the body thrown upon them, awakens the careful surgeon to the danger of the indiscriminate application of the "method."

ARTICLE VIII.

Pennsylvania State Dental Society.

The Executive Committee take pleasure in announcing the following programme for the meeting of this Society, at Bedford Springs, commencing July 30th, at 10 o'clock A. M., and continuing three days.

Essays.—1. Thirty years experience with Anæsthetics. By S. Welchens, D. D. S.

2. A review of the conservative treatment of the Dental Pulp. By Louis Jack, D. D. S.

3. Ante and Present Professional Education. By H. Gerhart, D. D. S.

4. The Accepted Creed. By Prof. C. N. Pierce, D. D. S.

5. Gold and Tin in combination. By Prof. D. D. Smith, D. D. S.

6. "Artificial Crowns." By Prof. E. T. Darby, D. D. S.
7. Why do fillings fail? The electro chemical theory of the "New Departure" *vs.* Defective Manipulation and Defective Structure. By W. H. Trueman, D. D. S.
8. "Tissuea." By Marshall H. Webb, D. D. S.
9. Discoloration of the Teeth. By G. W. Adams, D. D. S.
10. Subject to be announced. By R. Huey, D. D. S.
11. Address of the retiring President. By C. S. Beck, D. D. S.

Surgical Clinics.—A tumor of the Inferior Maxillae extending from the first Molar on the left side, to the first Bicuspid on the right side, will be removed. By Prof. Chas. J. Essig, D. D. S.

Operative Clinics.—Cohesive gold impacted against and over frail walls of enamel, so that such walls may be encased and protected by gold, and restoration of the contour of missing tissue by the aid of a New Electro-Magnetic Mallet. By Marshall H. Webb, D. D. S.

The use of Williams' Cylinder illustrated. By Robert Henry, D. D. S.

Restoration of Contour by the aid of the Electro-Magnetic Mallet. By Geo. B. McDonneld, D. D. S.

Operation with the Electro-Magnetic Mallet. By E. P. Kremer, D. D. S.

Operation. By H. C. Longnecker, D. D. S.

A number of new appliances will be exhibited by inventors, including File Carriers, Syringes, Chairs, Engines and many others by manufacturers.

The committee desire to make this an interesting feature of the meeting, and will make suitable provision for the exhibition of any inventions or objects of interest to the society that may be presented.

Excursion tickets can be procured in New York, Baltimore, Washington, and in all the cities of this State; also at all the principal stations of the Philadelphia and Erie, the Northern Central and the Pennsylvania Rail Roads. Persons desiring to go from Bedford to the American Den-

tal Association which meets at Niagara Falls the following Tuesday, can purchase tickets for Niagara Falls via Harrisburg or Tyrone, and at these points buy excursion tickets to Bedford, and as they return to these points resume their journey on their Niagara Falls' tickets.

Bedford Springs is one of the most healthful and popular summer resorts, consisting of a group of some 20 or 25 springs with names as various as their compositions, each spring being named after the predominating mineral held in solution.

The Hotel has ample accommodations for all, and the rates to persons attending the meeting will not exceed two dollars per day.

G. W. KLUMP,
WILLIAMSPORT, PA. *Chairman Executive Com.*

American Dental Convention.

The twenty-fourth annual meeting of the American Dental Convention, will be held at Niagara Falls, commencing August 6th, 1878. All members of the profession are invited to attend.

AMBLER TREES,
Secretary.

ARTICLE IX.

Cheiloplasty.

Surgical Clinic of JOHN H. BRINTON, M. D., in the Jefferson Medical College Hospital, May 29th, 1878.

GENTLEMEN.—The first case I shall bring before you is this little girl, six years of age, upon whom, five weeks ago, I performed a cheiloplastic operation, the formation of an entire upper lip. The original lip, you may remember, had been destroyed by sloughing following an attack of small-pox. Not only had the lip been destroyed, but also those parts of the superior maxillary bones which rest behind it and form its support. These had become necrosed, and

came away in part, and were in part removed by Dr. Lamb, who had charge of the case at the time, and who has brought the child to this clinic for such help as surgery may give her. The operation I performed before you with the excellent advice and assistance of my colleague, Dr. Levis. I explained it to you at the time. You will recollect that large flaps were turned in from the cheeks, involving their entire thickness through into the mouth; that on the left side being the larger. These flaps were then united in the middle line by hare-lip pins, and the incisions on the cheeks were closed in the same manner, great care being taken to preserve the angle of the mouth.

You here see the result. The new upper lip is firm and strong, and all the incisions made by the operation have united. The success in this case is satisfactory, beyond my expectations; indeed, it is almost an exceptional result so far. You will notice that there is a little contraction of the newly placed tissues, with some narrowing of the mouth; this is unavoidable, and not to be wondered at when you reflect that all bony support is absent at the centre, owing to the deficiency of the maxillary bones. This contraction has occurred in spite of the very large size of the flaps. Where such large cicatrices are present, you must expect contraction, and you must remember that if you hope to attain success in plastic operations you must reach it by cutting large flaps and by free incisions.

Can I remedy this contraction? Yes, but not at this moment. I must wait until the contracting influence shall have spent itself, as it were, and until the new tissues shall have become old and solid. I shall then free the parts beneath, and perhaps do something more. In the meantime the parents of the child must be content, as, indeed, they are, with what has been already accomplished, and in the future I shall endeavor to perfect the result.—*Med. and Surg. Reporter.*

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ARTICLE X.

Treatment of Stomatitis Materna.

BY E. P. HURD, M. D., NEWBURYPORT, MASS.

The pathology of this affection, which is sufficiently common in the experience of general practitioners, is obscure; is seen in patients who seem to be well in other respects; is generally an index of lowered vitality: sometimes an inflammation, the result of local nutritive disturbances of reflex origin, the irritation being mammary. In the ptyalism of pregnancy we see an instance of the same etiological kind.

Stomatitis materna, takes the form of acute or chronic oral catarrh, also aphthons and ulcerative stomatitis.

It is sometimes very obstinate and intractable. Weaning the child always brings about a speedy cure. It is, however, generally amenable to treatment of a simple nature. Where from lowered vitality, a tonic regimen, as quinine, porter, iron and cod-liver oil is required, there are two preparations of the latter in the market, which I find almost equally serviceable—Scott's Emulsion and Phillips'. Many, however, can take Phillips' oil that cannot take Scott's. Phillips' oil is borne by the most delicate stomachs. I consider this preparation invaluable for nursing women whose nutrition is below par.

Nursing sore-month will often yield to astringent gargles, or mouth-washes. Chlorate of potash is good in this affection, as in all other oral affections of an inflammatory and ulcerative nature.

The glycerite of tannin, a great favorite of Ringer in all these complaints (see his *Handbook of Therapeutics*, page 300,) is sometimes all the application that is needed—to be brushed over the parts affected twice or three times a day. Where astringents alone will cure, this will cure.

The sulphites, especially the sulphite of sodium, the sulpho-carbolate of sodium, are recommended. The sulphite

Local Effects of Astringents upon Blood Vessels. 135

of sodium may be given internally, in doses of a scruple three times a day, and also used as a mouth-wash. The same dose (1 scruple) may be given of the sulpho-carbolate of sodium, and, dissolved in an ounce of water, used as a gargle. These medicines undoubtedly have an alterative effect, as well as a local action (see Braithwaite, Part 63, page 24.)

The tincture of smartweed (*Polygonum punctatum*) in drachm doses, diluted with water, to be taken internally, and used as a gargle, is highly recommended by a writer in the *Philadelphia Med. and Surg. Reporter*. Another authority regards bismuth, in ten-grain doses, as a certain remedy.

In several obstinate cases I have used the following formula with good results. (The formula is borrowed from the *Reporter*.) In one case cure followed in less than a week, but during its use the baby, previously well, was severely griped and purged. I think that it should be used with much caution, and discontinued in a few days if it does not seem to do good, or if it affects the baby injuriously. The dose of the biniodide is about one thirtieth of a grain:

R. Hydrarg. biniod, gr. v. Pot. iod. gr. x. Aquæ ʒj.
M. Ft. sol. liq.

Take three to five drops, after meals. For a mouth-wash, add six drops to a tablespoonful of water.

This remedy, besides its local stimulant and resolvent action, undoubtedly does good as an alterative, improving local and general nutrition.—*Med. Record*.

ARTICLE XI.

Investigations on the Local Effects of the so-called Astringents upon the Blood Vessels.

Dr. A. Rosenstein, (*Wuerzburg, Phys. Med. Verhdlg.*, 1876,) examined the effects of solutions of argentum nitricum, plumbi acetat, acidum tannicum, gallicum and pyrogallicum, ferrum sesquichloratum and alumen, by applying

them to the mesentery of curarized frogs, and measuring the calibre of the affected vessels with the micrometer. The most powerful contraction was produced by nitrate of silver in a solution of one to ten per cent., the observations being often disturbed by the ensuing partial opacity of the tissues. The contraction in many cases involved one-half of the lumen, both of the arteries and veins, being less marked in the capillaries, and manifesting itself in the course of a few seconds. R. observed a stoppage of the circulation in the affected vessels, which, was permanent in the capillaries, but at times only transitory in the arteries and veins. Tannic acid, contrary to expectations, was found to have the opposite effect, dilating arteries, veins and capillaries, as much as one-half of their calibre, while they became at the same time choked with blood corpuscles. The dilated vessels immediately contracted on the application of nitrate of silver. Gallic and pyrogallic acids were found to have the same effect as tannic acid. Acetate of lead produced a contraction of the arteries and veins, though less markedly than nitrate of silver. Its effect could not be traced to the capillaries. Occasionally, a stoppage of the circulation was observed. The vessels almost invariably contained white coagula, consisting of conglomerated, colorless blood corpuscles, often adhering to the walls of the vessels, and thus giving to their transverse sections a beaded appearance. A ten per cent. solution of liquor ferri sesquichlorati had no perceptible effect. A fifty per cent. solution caused a contraction of the vessels, though in a still lower degree than acetate of lead. This contraction was limited to the arteries and veins, while the capillaries remained dilated. A frequent result was coagulation and discoloration of the blood within the vessels. A discrepancy was observed in the results of the various experiments with alum solution. The vessels were in some cases contracted, in others dilated; while in others again, no appreciable change was noticed. In the capillaries, especially the smaller ones, the circulation often ceased. In order to prevent reflex

action, he extirpated the spinal column of the frog, and destroyed the communication between the vessels and the heart, without changing in any way the local effect of the substances above mentioned. From the results of these experiments the author infers that only nitrate of silver and acetate of lead can be said to exert an astringent action, i. e., to cause contraction of the tissues, this effect being of uncertain occurrence in alum, and the liq. ferri sesquichlor., and entirely absent in the tannic group.—*Toledo Med. and Surg. Journal*

EDITORIAL, ETC.

[The following circular has been recently issued. The profession is familiar with the hard fight made against this monopoly in the past, and familiar also with the results. The new evidence here presented is certainly strong corroboration of the conviction which all fair-minded men have held from the start, that the Goodyear Dental Vulcanite Company had no just right to the royalty they collected. The importance of the matter to the profession is seen in the strenuous efforts of those who are working up this new case, and the previous failures made may in this case show the way to success, and if it can be done, it is the duty of the Dentists to shake off this oppression. The fact cited in the circular respecting the use the Rubber Company intend making of the Hæring patent should stimulate endeavor to break their case. We trust that entire success will attend this latest effort.—ED. AMER. JOUR. DENTAL SCIENCE.]

Hope for the Dental Profession.—At last, after so many cruel disappointments, there is a strong hope grounded in facts that the Dental Profession will be relieved from the odium of a long subjection to the unjust monopoly of an illegal patent.

For twelve years its members have been forced to pay to the Cummings patent, in the hands of the Goodyear Dental Vulcanite Company, a tribute amounting to millions of dollars.

They have during this time made many attempts to throw off this galling yoke, but their efforts were fruitless, because in every case there was either treachery and collusion on the part of those whom they trusted, or a failure to place the strong points of the defence in a proper manner before the Courts, and to sustain these strong points by competent proof that was in existence and accessible.

This announcement of the cause of former defeats was made a year and a half ago in a circular that was sent to prominent Dentists in all parts of the country. The position then taken is now fully confirmed by the testimony for the defence, already taken and on record, in the cause of the Goodyear Dental Vulcanite Company *vs.* O. H. Brightwell. This is one of several suits instituted in July, 1876, against Dentists in Baltimore and Washington, for infringement of the Cummings patent. It is now being rapidly pushed to a conclusion, and has progressed so far that the direct testimony for the defence is completed and on record. This defence, with the testimony supporting it, is essentially different in form and matter from that of any former hearin.

Our proof as recorded is:

1st. That when John A. Cummings made his application for a patent in 1855, and even when he filed his caveat in 1852, there was a patent on record in the Patent Office which covered all the ground that he claimed or could claim, or in nearly the official language of that office, "deprived his invention of all claim to novelty."

2nd. That prior to 1852, dental plates, both experimental and practical, were made of hard rubber, thus establishing priority of invention over him by antedating him, even if he did invent what he claimed.

3rd. That he did not invent what he claimed, for we have evidence that he knew nothing practically about making dental

plates of hard rubber until 1861 or 1862, when he paid an agent of the American Hard Rubber Company, who testifies to that fact, to instruct him in the method and process of making such plates; also, that the man from whom he obtained the model filed by him in 1855, could not at that time make such plates.

4th. That after the rejection of his application in 1856, this patent became an abandoned one by the operation of the laws and rules governing the Patent Office, as well as by the practice thereof, and more especially and fully by his personal knowledge of the general use of hard rubber for dental plates between the years 1856 and 1864, without protest or objection on his part to such use as an infringement of his rights, and further by his express declaration that it was a humbug, and that he would have nothing more to do with it.

The evidence on these points is direct and positive, and taken on a whole, forms as we believe, an impregnable structure of defence. It has been obtained and placed on record only by great care and unceasing watchfulness on the part of the attorney and the representative of the Dental Profession who have been conducting the defence. The greater part of the labor has been performed, but much that is important remains to be done. The Attorney must attend the taking of testimony by the complainants in rebuttal, and cross-examine the witnesses; the case must be made up for the hearing, and the record printed. This of course cannot be done without further expense, and we ask every member of the Profession who sees this circular, to join with those who have so liberally subscribed, and aid in the vindication of the Profession from this great and shameful wrong, a wrong which is not limited to the existence of the Cummings patent, but will, if we are not now successful, continue for five years after. For the Goodyear Dental Vulcanite Company claim another patent, the "Hæring," which is almost identical with the Cummings, and which—issued in 1869—does not expire till 1886. We have received intimation that the Goodyear Dental Vulcanite Company intend to enforce this patent as they have the Cummings; they have indeed licensed under the Cummings and Hæring patents.

The former decisions of the United States District and Supreme Courts were based upon *the evidence as presented in the cases then*

before them, and cannot be conclusive upon the present one, in which a different state of facts is presented and proven in support of a different and stronger line of defence.

This great case is thus briefly stated, and the views set forth in the statement are endorsed, with but few exceptions, by all who have become acquainted with the character and directness of the evidence, including many of the most intelligent Dentists in New York, Boston, Baltimore and Washington, because they are satisfied from the results thus far attained, that the work in this case has been and will be to the end *honest and earnest*.

Then let every Dentist in the land do his part to aid in this last effort which gives such fair promise of being successful, to free the Dental Profession from the merciless clutches of Josiah Bacon & Co.

Contributions will be received and acknowledged by either of the undersigned, and the last named, Dr. Hunt, will cheerfully give to those desiring it, all information he can on the subject.

DR. W. H. DWINELLE, Chairman N. Y. Committee, 27 W. 34th Street, New York.

DR. W. H. ALLEN, Treasurer N. Y. Committee, 18 W. 11th Street, New York.

DR. R. B. WINDER, Baltimore Committee, 140 Park Avenue, Baltimore.

DR. L. D. SHEPARD, 100 Boylston Street, Boston.

DR. R. FINLEY HUNT, Manager for Defendants, 1806 H. St., Washington, D. C.

Chloroform and the Dentists.—"Mrs. Elizabeth Neely came to her death, March 20th, 1878, at No. 224 North Tenth Street, Philadelphia, by chloroform administered by Dr. H. G. Winslow, * * * and Dr. Winslow is guilty of criminal ignorance in administering so powerful a remedy, and in not having made any examination of his patient."

So reads the verdict of the Coroner's jury. This case has gone the rounds of the press, and severe animadversions made upon the criminality of such conduct. Dr. Winslow has been stigmatized as little less than a murderer for using so dangerous an agent as chloroform at all, when the equally efficient and ennoxious nitrous oxide gas was available, or when ether might be

used as well. Not a little abuse also has been made of the dental profession for daring to use chloroform, the newspaper critics seeming to think that the responsibility of administering this agent should be shouldered by a physician; though why, if the chloroform is to kill, the physician should bear the burden of the death, is hard to see; and why the educated dentist should not be able to select his cases for anæsthesia by chloroform, is equally difficult of comprehension. Certainly dentists *ought* to be posted on this subject if constant presentation of it in dental and other literature avails to enlighten them.

But it so happens in this case, that the administrator of the chloroform was not a dental but a medical man, and a medical graduate, who graduated in the Jefferson Medical College, in 1841, and had been since then engaged chiefly in the practice of medicine. He was looked upon rather as an expert in the administration of chloroform, and was frequently employed by surgeons to administer it for them. In the case in question he gave the anæsthetic without making an examination of the patient, which the coroner's physician, Dr. Chapman, testified should have been done, and

"He thought that before administering either chloroform or ether the physician or dentist should, on all occasions, make a careful examination, and ascertain whether or not any heart trouble existed. He thought deceased had been suffering from disease of the heart previous to having the chloroform administered by Dr. Winslow, as the clot adhering to the heart gave evidence of having been there for some time. From the flabby condition of the heart, the chloroform, in the opinion of witness, must have directly acted upon that organ; he thought that ether was less dangerous than chloroform; very few cases of death have resulted from the former, while hundreds of cases are recorded as having resulted fatally by the latter."

The testimony of Dr. Winslow was that the lady came to have some teeth extracted;

"He asked her whether or not she was well, and she answered yes; administered chloroform and extracted three teeth, she at the time being in a recumbent position; after extracting the three teeth she came to and complained of feeling the pain; administered more chloroform on a napkin, which he placed in close proximity to her nose, but not close enough to come in contact with the face, and she again sank into insensibility; in

pulling an eye-tooth, after having administered the chloroform the second time, it broke off, and in attempting to remove the remaining portion, found that respiration had ceased with patient; applied the usual remedies, consisting of electricity, throwing water in face, and made every effort to secure an artificial respiration, but it was useless as she ceased breathing; witness summoned Drs. Jackson and Gross, but when they arrived she had expired; witness stated that he had used chloroform for a number of years, but never had anything serious to result from its use; he would not have administered it to Mrs. Neely if she had informed him that she was suffering from heart disease; the quantity of chloroform given to the deceased was about $\frac{1}{2}$ an ounce; he has used both ether and nitrous oxide gas, and was of the opinion that there was as little danger in using chloroform as either of the former."

Other witnesses testified to the apparently healthy condition of the patient.

The flippancy with which coroners' juries decide the question of the relative harmlessness of anæsthetics, and the oracular tone in which the coroner in this case pronounces his "opinion" as to the guilt of the action of the administrators of such agents, is certainly remarkable. For a jury to decide that death was caused by the chloroform was advanced ground to take, considering that the patient had an "old clot in the heart," and considering that such cases are dropping about the streets of our cities every day, or falling dead in their houses; and it is surely more than a coroner or his advising physician can safely say to assure the public that under such circumstances ether was much safer, and nitrous oxide gas was *perfectly safe!*

What we wish specially to call attention to, is the fact that this case has been paraded over the country as the case of a dentist, and not a few harsh and unjust criticisms have been made on this assumption of a fact. There are ignorant dentists, as there are ignorant physicians, but it is hardly right to assume that in all cases the dentist is possessed of no ability to judge of danger in such cases, or to promptly decide upon the means of succor in case of an untoward result.

But the tide is turning away from anæsthetics, and it is well. Many dentists who gave gas have given up its use, and the tendency is strong toward the more or less complete abandonment of general anæsthesia, by this profession. Surely the day will

yet come when a safe and efficient method of *local anæsthesia* will be discovered, and toward this end the studies of the dental profession should be turned. H.

College Changes.—Dr. B. F. Coy, retires from the chair of Dental Surgery, Maryland Dental College, his place being filled by Dr. R. B. Donaldson, of Washington, D. C.; and Dr. S. M. Field, as Professor of Chemistry, is succeeded by Dr. R. Finley Hunt, of the same city. H.

BIBLIOGRAPHICAL.

Proceedings of the American Dental Convention, the Southern Dental Association and the Dental Association of the State of Maryland and District of Columbia, in United Meeting, held in Oakland, Md., August 14th to 17th, 1877.

The pamphlet of over 100 pages containing the proceedings as above, has just been received. It contains in addition to the article by Dr. Waterman, on the Spectroscope and Anæsthesia, published in the March No. of this JOURNAL, an address of welcome by Dr. Edward Nelson, of Frederick, Md.; a paper by Dr. E. Parsons, of Ga., on Dynamic or Vital Forces; one on Embryology, by Dr. Atkinson, of N. Y.; one on Therapeutical Treatment of Dentinal Pulpæ, by Dr. McLain, of New Orleans.

On Anæsthesia, by Dr. H. C. Thompson, of Washington, D. C., besides various reports of committees, debates, etc. The report is neatly gotten up and contains much that is interesting to the profession.

Much debate seems omitted from the reported proceedings, whether by the official reporter, or by order of the association,

does not appear,—much that appeared to the writer exceedingly interesting when heard.

The long delay in the appearance of this and of similar publications is apparently unnecessary, and must detract from the interest with which such papers are received. Ten months' delay in issuing a pamphlet of 100 pages is inexcusable. It would be better to make such abstracts from the proceedings as would give the gist of the debates, and furnish these and such such papers as are readable to the Journals.

The list of officers of the American Dental Convention is published as follows:

President.—Dr. J. Taft, of Cincinnati, Ohio.

Vice President.—Dr. J. R. Walker, of New Orleans, La.

Secretary.—Dr. Ambler Tees, of Philadelphia.

Treasurer.—Dr. J. G. Ambler, of New York.

A motion was adopted that a committee of ten be appointed to confer with the committee of ten of the American Dental Association, and a similar committee, if appointed, from the Southern Dental Association, with a view to the formation of a National Representative Dental Association, and the President, Dr. Atkinson, appointed on that committee Dr. R. B. Winder, of Baltimore; A. L. Northrop and John Allen, of New York; B. F. Coy, of Baltimore; J. Taft, of Cincinnati; C. E. Kells, of New Orleans; R. B. Donaldson and H. B. Noble, of Washington; C. King, of Pittsburg; and C. F. Vandenburg, of ———

The officers of the Maryland and District of Columbia Dental Association are as follows:

President.—Dr. B. F. Coy, Baltimore.

Vice President.—Dr. J. C. Smithe, Washington.

Recording Secretary.—Dr. M. W. Foster, Baltimore.

Reporting Secretary.—Dr. F. F. Drew, Baltimore.

Treasurer.—Dr. H. B. Noble, Washington.

This Association meets in Washington, D. C., on the second Tuesday, in October next.

H.

THE
AMERICAN JOURNAL
OF
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Vol. XII. THIRD SERIES—AUGUST, 1878. No. 4.

ARTICLE I.

*Offerings.**

BY J. F. P. HODSON, D. D. S., NEW YORK.

1. Bibulous paper cut into long diamonds—say three inches long by three-fourths of an inch wide—and twisted lengthwise into a smooth, hard, double-pointed thread, and kept on hand in quantities, will be found especially adapted, and very excellent, for drying out pulp canals after the bulk of the moisture shall have been removed with the ordinary rolls or pellets; inasmuch as the paper threads will penetrate the canals to their extremities, and *absorb* the contents, without the tendency to pack the latter at the upper end of the root, or push them through the foramen, which cotton wound upon a broach possesses.

* Dr. Hodson does not wish to be understood as claiming originality of invention or discovery for any of the "offerings" he presents. They are simply things from which he has derived much benefit in his practice; and he hopes that those unacquainted with any of these items may derive similar benefit from them.—Eds.

2. A pledget of wet spunk in the tweezers will take up the finishings from gold fillings wherever they may have fallen—either upon the teeth, dam, or mucous membrane—and is a good substitute for the spittoon trap for saving gold—the pieces loaded with waste gold being thrown into the vessel of water usually kept for the purpose of rinsing gold from files and burrs, and burned out in the final melting of the total washings.

3. If, after having applied the rubber dam, it be found that the holes have been placed too near together in any place, or any one slightly torn in applying, and that in consequence the moisture exudes about the teeth, a small pledget of the spunk wedged between the teeth at their necks, from both the buccal and lingual surfaces, and so treating one or two spaces on each side of the tooth to be filled, will entirely obviate the difficulty. Even though the pellets do not wedge back the leakage *in toto*, but require changing, even two or three times during the operation, it is unquestionably better to thus compromise with the error of judgment than to subject the patient to an entire reapplication of the dam. It is hardly necessary to observe that this course is not an admissible one, when the exudation comes from the space where the filling is being done.

4. A veritable "friend in need," sometimes, is a little appliance which I may call a "rubber dam stopper," with which an accidental puncture of the rubber may be *quickly* and *certainly* sealed. In the earlier years of the rubber I employed ordinary corks for this purpose; but from the difficulty of keeping them in their place, their liability to suddenly jump out of the opening and flood an operation, and the large amount of room which they absorbed, I some years since substituted these appliances. They are simply disks of any suitable material—hard rubber, soft rubber, cork, etc.—say one fourth to three-eighths of an inch in thickness, with a deep groove cut entirely around their circumference, and equidistant from each face, thus producing, after all edges shall have been nicely rounded, something akin to two round-edged buttons placed face to face,

and which may be caught up with the tweezers, and in an instant pushed half way through the puncture, the edges of which close into the deep groove, and so entirely seal the opening. This leaves but a little flat button on either side of the rubber, and consequently involves no loss of room or light, while the groove keeps the appliance perfectly in position. I keep by me half a dozen different sizes, from one-eighth of an inch to one inch in diameter at the bottom of the groove, which variety I have always found sufficient to render instantly harmless any reasonably sized puncture of the dam. They may also be valuably employed in such cases as one's having made a miscalculation in cutting the holes for any particular operation or having torn the rubber in the effort to pass it between teeth, or where one chooses, as many do, to employ the same piece of rubber more than once, by tearing out the isthmus of rubber between the holes, and placing one of these appliances in the single opening thereby produced; after which the rubber may be treated in all respects as a fresh piece. It is seldom, surely, that a skillful operator will need these appliances for punctures; but when they *are* wanted, the need is very sore and urgent.

5. The exquisitely thin sheets of cork which are used by hat makers will be found a very convenient form of this material from which to cut small pieces to be placed upon the floors of cavities, as non-conductors of thermal changes.

6. An excellent precaution, in the preparation of pulp cavities, when cutting is to be done for the purpose of enlarging the opening, etc., is to push a little pledget of cotton up or down *each* root beforehand, and beyond where any operating is to be done, to be left there during the operation.

It will save the real annoyance of any chips or refuse becoming lodged in the roots, and assurance is had of their cleanliness by its withdrawal afterwards.

7. A buffet, made by covering a block—say, 3 or 4 inches long, by $1\frac{1}{2}$ inches wide, and $\frac{1}{2}$ inch thick—with leather, covering this again with chamois, and rubbing a little rouge

upon the surface, is convenient to have in the operating case, to polish the burnisher upon *each time* before carrying it to a filling. It will then really accomplish its purpose of *burnishing*, and not drag the surface of a filling, as it would if clogged with gold from a former burnishing.

8. I would suggest to such of my professional brethren as have not already done so, a trial of the compound solution of iodine (commonly called "Lugol's Solution," and the formula for which may be found in any U. S. Pharmacopœia) in most, if not all of the places where tincture of iodine has been the usual remedial agent. It is an aqueous solution instead of an alcoholic one, and as such has, especially when topically employed, greater affinity for the tissues, and a consequently greater *penetrative* action; and inasmuch as the ultimate action of iodine is that of an urgent appeal to the absorbent system for its especial activity, this is certainly a valuable consideration in the directions in which we employ it. This quality, as well as the fact of its being more concentrated than the tincture, adds to its value as a rubefacient, or as a mild counter-irritant. It cannot but be patent, moreover, that for abscessed conditions it should be superior to the tincture, because of the instant coagulation by the alcohol in the latter of the albuminoid constituents of the pus, particles of dead pulp, blood, etc., remaining in the deeper portions of the canals, or weeping into them during the operation of dressing, whereby, instead of cleansing the pulp canals and the tubuli of their contents, as we are earnestly desirous of doing, we are in reality filling them up with undissolvable particles of coagulated albumen, to be possibly pushed through the foramen at the next dressing, to perpetuate, or, at the least, prolong, an abscess, if there be one in active operation, or to develop one, if it be still undeveloped. (It may be well to say here that I do not wish to be understood as counseling the employment *inside the tooth* of *any* preparation of iodine; but in the case of its *being* used, suggest this preparation of it as the one least likely to cause after regret.) In view of these

considerations, and the additional very serious one consequent upon them—viz., that if these albuminoid matters be freed by coagulation, especially in the tubuli—all subsequent attempts to change for the better the color of the tooth, short of actual cutting out, must prove practically fruitless—it has long been my conviction that alcohols in any form—including, very especially, the *quasi* alcohols, carbolic acid and creosote—should never be allowed to touch the pulp canals or their contents, until by thorough and persistent cleansing with warm water, alternated with the use of the absorbent paper needles mentioned at the beginning of this article, the canals and tubuli shall have been as thoroughly cleared and freed from foreign matters as it is possible to make them by these means—nor even then, if, on the one hand, the tooth be dark-colored, and require blanching treatment afterwards, or, on the other, if pus or blood can weep into the canal from an unfistulated abscess. In fine, I consider the above remedies, *per se*, excellent weapons with which to war with “pus conditions” but *I do not believe the pulp canals to be a fitting place for such encounter.*

My method has long been, upon opening a dead tooth, and after cleansing as thoroughly as possible with water, broaches, paper needles, etc., to give it a two days’ dressing with “Dental Pepsine.” It may be my fancy, but it has always seemed to me that I accomplished thereby a very perfect solution of all the albuminoid matters—not only such as are contained in the canal proper, but of those in the tubuli as well—after which, alternate rinsings and dryings would leave the interior very pure and clean, and ready for treatment (if necessary) with aqueous solution of salicylic acid.

9. The property possessed by creosote and carbolic acid, of promptly co-agulating albumen, though in my judgment so serious a bar to their employment in pulp canals (I hope no one will understand me as therefore meaning, in *abscesses*, for they unquestionably stand foremost on the list of reme-

dies for pus-producing surfaces, only *keep them out of the nerve canals*, except as a *dernier resort*,) render them especially valuable for lining cavities before introducing the gold, and in this I most decidedly take issue with those who make the sweeping assertion that they are of no possible value in such employment, or that they may produce such irritation of the pulp as to occasion its death. Of the former hypothesis I will speak in a moment; as to the latter, for very many years of exclusively "operative" practice I have pursued this method in practically every cavity, and have yet to see the first dead pulp which, by *any stretch of imagination*, could be ascribed to it; and it seems to me that to call dangerous to the pulp an agent that, in so continuous employment, as in every case for years has never yet had such untoward effect, savors much more strongly of the *transcendental* than the *residential*. With the questions of their value for the reduction of the sensibility of dentine previous to excavating, or for the arrest of decay under a stopping by "hardening" it or for "destroying the bacteria," or what not, I have nothing to do. I do not use them for any such purposes. For sensitive dentine I have more faith in a keen excavator, and a skillful and rapid hand, that makes every cut one of value, than I have in *any* medication—except such, indeed, as is applied simply to neutralize acid conditions, or unless temporary stoppings may be so denominated; indeed, it has always seemed to me that these applications, besides having very much of the nature of "puttering," were, at their best, but the *substitution of one hurt for another*. As to their being a specific against decay it seems unquestionable, to my mind, that if decay crops out at the margins of even perfect fillings, it will surely afterward proceed, whether saturated with creosote or not; whereas, if left in the bottom of a cavity and *hermetically* sealed with a stopping, it seems equally certain that it will *not* afterward proceed, whether saturated with creosote or not.

The use to which I put creosote and carbolic acid in a

cavity, is to produce such a condition as shall lessen the effects of thermal changes after the gold shall have been introduced. With the cavity perfectly dry after excavating, I place in it a drop of either of these agents to remain two or three minutes, while I turn to prepare the gold intended for its reception. When the slight hurt of the application *has ceased*, not before, I proceed to dry and fill the cavity. I feel that I have thus coagulated the contents of the dental tubuli for a trifling depth, and so secured a non-conducting head—so to speak—to the contents of every tubule which leads from the filling to the pulp, and made, thereby, a more perfect non-conducting lining to every part of the cavity than could be secured by any other means, and that, too, without using up my cavity depth or holding points, as would have been done by a more tangible capping. I *know* that I have done present good by the fact of the drying out *after* the application being painless, as also will be the packing of the gold; whereas, the mere drying out *before* the application was exceedingly painful. The produced condition is not an *absolutely* non-conducting one, truly; but is sufficiently so for the great comfort of the patient; and it also tends, by greatly diminishing the shocks of thermal changes, to assist Dame Nature (by the negative process of removing obstacles so far as may be,) to reassert herself and restore the parts to as nearly normal a condition as would be possible under a gold stopping. I may here instance an item of personal experience which may be of interest in this connection: Some ten or twelve years since I had three gold stoppings inserted in as many of my inferior molars, and by three different operators; the cavities were extraordinarily alike in every particular, being very large, but shallow, and it seemed to me, with a living *soul* in each. Two were lined with creosote at my request, and I have never since particularly noticed that they existed; but in regard to the third, the gentleman who filled it declared so strongly that my suggestion was a mere fancy (of Dr. Atkinson's, I think he said,) was all nonsense, etc.,

that, being many years his junior, I deferred to his age, and did not insist upon its application; the event, however, proved him to have been entirely incorrect in the matter, as I was obliged for years to "engineer" all hot and cold substances past and around that tooth, because of its great sensitiveness to them, and endured much sorrow and tribulation when I accidentally or carelessly "lapse" during that time.

10. I have always been at a loss to account for the very extensive employment of myrrh which obtains for tooth powders and mouth washes and as a mouth wash, in the form of "tinct. of myrrh." Being a resin, and dissolved in alcohol, it is precipitated instantly it comes into contact with the fluids of the mouth, and the fine insoluble precipitate collects about the necks of the teeth, insinuating itself under the edges of the gums, making great havoc with them, and eventually with the teeth—such harm, many times, outweighing all the healing qualities that may be possessed by itself and the alcohol besides. In my own practice it is tabooed, precisely as charcoal would be, it being, to my mind, as entirely inadmissible for any employment in the mouth as the charcoal and for the same principal reason, its total insolubility in any fluids resident in the buccal cavity. It seems hardly necessary to speak of its use in tooth powders—the gum is deliberately put into *such* already precipitated!

11. For temporary dressings or trial stoppings in abscessed teeth, or in the cases frequently occurring where it is deemed expedient to postpone to the next sitting the permanent stopping of a very large cavity, I am accustomed to filling the cavity nearly full with cotton, and placing over it a facing of Hill's stopping. All-sufficient hold for the temporary requirements of the stopping may be easily obtained at the sides. This produces as perfect a cavity sealing, for the time being, as solid Hill's stopping—a quality which neither cotton, saturated with the untidy *sandarach* or the fleeting *wax*, can be depended upon to possess. It is

^{also} very easily and quickly removed ; in which respect it is ^{far} superior to either the *solid* gutta-percha or sandarach on cotton. Indeed there will no doubt recur, to many who have used this latter, instances in which it has required all their skill and ingenuity to remove the large hard mass—though it was loose in the cavity—without breaking out the side walls of the tooth.

12. Whenever blood shall have gotten into a cavity after its preparation it should be *washed* out before the introduction of the gold, with *e. g.*, a little pellet of spunk, saturated with warm water ; to simply dry it out will surely occasion after regret ; as, although this may remove the present appearance of discoloration, the oxidation of the slight amount of blood left will, after a time, show a dark stain through the enamel, giving to the whole much the appearance of a leaky stopping. Much less should tannin be used to stop the bleeding, as this acid is one of the mordants, and sets the coloring matters of the blood ; in fact, forming, with the iron in the latter, tannate of iron (ink) a stain not easily eradicated.

13. I deem it prudent, in my own practice, to *always* look carefully at the rubber dam immediately upon its removal after an operation, to be certain that it is *all there*, as, however much it may have been torn or punctured, its resilience is such as that, if held or laid flat, all torn parts will readjust themselves to their proper positions in respect to each other, and the fact of a missing piece, however, small, be readily known ; as also, of course, by nothing its place on the dam, where to look for it in the mouth. And although a patient will usually point out the fact of a piece having been left between the teeth, if such *be* the case, it is obviously not so *certain* a dependence as to examine the dam—and I have known such inadvertently-left bits of rubber to accomplish serious harm.

14. I have to suggest a method which I sometimes employ with Hill's stopping, that may be of value to those who entertain the belief that this material cannot be so ap-

plied as to exclude moisture. It is simply to saturate the *perfectly* dried walls of the cavity with chloroform, and, while still wet, to paint them with a thin solution of Hill's stopping in chloroform, evaporating the latter perfectly, and packing the cavity carefully with warmed pieces of the stopping. I have long used this method, and with very excellent results, though my employment of it has been especially directed to very sensitive cavities, my object being to save the exquisitely sensitive surface the shock of the heated stopping applied *directly* to it, and also to secure the *positive* obtunding effects of the chloroform. I wish to say just here that I most decidedly antagonize the proposition recently so *absolutely* advanced, that gutta-percha stoppings *cannot* be so inserted as that they will not leak! That they usually *are* not is another hypothesis, and a possibly admissible one, inasmuch as the usual and recommended mode of insertion is to heat a single piece of the material and crowd it into the cavity, crowding out the excess, moulding it while warm, so that, thrusting it in at one side of the cavity forces it correspondingly out at the other—a course that can be fully depended upon to effectually destroy any proper adaptation to the walls—and finally completing the delicate (?) operation by trimming it, while still soft and yielding, with a thick instrument, warmed only sufficiently to drag the yielding mass back and forth as it is trimmed, and so pull it away from the walls and edges, even if it had before been perfectly adapted to them. *Per contra*, the cavity having been made *very* dry, a piece, well warmed, should be placed in one side of the cavity, condensed properly into *that* place, *held against any movement after it is once so adapted*, and care taken that no such extra pressure be brought to bear upon any new pellet, as it is added, as shall move from their *packed adaptation* the portions which have gone before. In most cavities, and with proper care in packing, there need be no necessity for trimming, as there will be no excess, and it will only remain to carefully burnish the surface smooth. If, however, there be such necessity, the stopping should be

cooled, and then trimmed with a thin, burnished-surface instrument, made so hot that it shall pass over the surface and cut off the excess, without heating the body of the stopping; if more than one cut be necessary, being *very* certain that none has remained upon the instrument to ruin the whole by dragging the surface, and then, if needful, carefully making certain of the extreme edges by means of a round cold burnisher.

I firmly and determinedly believe that such a stopping will *perfectly* exclude moisture, *all* assertions to the contrary notwithstanding, and such belief is made reasonable certainty by the fact that, in the removal of such stoppings, the material does not leave the walls easily, and I am oftentimes somewhat annoyed by being obliged to "whittle" the walls clear of the layer that is in juxtaposition to them, so perfect is the adhesion.

15. In placing large amalgam stoppings, the tendency of the mass to contract in hardening, or, what would produce the same effect in a stopping, its inclination toward the assumption of a globular form, so tending to pull the material to a greater or less extent away from perfect contact with the walls and edges, I combat, and I think render almost *nil* in one of two ways, using ether, according to its applicability to the cavity to be filled, and of course *super-added* to all usual precautions, as employing the material dry, etc. One is to fill only next the walls at the first sitting, leaving the centre free, and to be filled with *any* easily removable material which can be depended upon to retain its form *inflexibly*, until the edges shall have perfectly hardened, it then being removed and its place supplied with amalgam, thereby completing the insertion, the polishing to be done afterwards. The other is to supply as much as possible of the *body* of the stopping in *one single piece*, with a cake of the same *already hardened*, (*i.e.*, from a previous using or otherwise,) the effect of which is at once seen to be that, in consequence of the great central bulk of the stopping having been already "contracted" or "globularized,"

or what not, security is had against those predilections as to the *mass* of the stopping, while as to the new material at the edges the security comes from the fact that the whole central part is hard and unyielding, and the entire amount of pulling away must consequently be confined to the shrinkage upon itself of this strip around the edges—a matter practically of no moment. My method, as to details is first to pack the sides and floor of the cavity, then to rub a slight coating of mercury over the back of the hard piece which is to occupy the centre, pack a little thickness of the new material upon this, shape its “bed” in the cavity to correspond, and then carefully settle it into its place, after which the edges may be proceeded with. The results of this practice with me have been *exceedingly* gratifying.

16. There is scarcely a question that the two especially prolific causes, among reputable operators, of failure in gold stoppings (speaking, of course, of controllable failures, and not of the inroads of disease, nor of the destruction caused by careless or slovenly patients) are *imperfect fillings at the cervical margins of approximal cavities*, and *the leaving, or making of sharp angles in the formation of cavities* in general, to be, at the best, but imperfectly filled and to afterward form centres for new decay. This bit of wise counsel was given me by one of my preceptors many years ago, when I was just beginning to creep, professionally: “My boy, give all the moments you can spare during an operation to cervical edges; you’ll never find that you’ve spent unnecessary time upon them.” This was long years before the advent of the rubber, and when, in the stopping of approximal cavities, it was necessary to employ *every moment* to advantage. My good old friend, Dr. George E. Hawes, used to say, “Let me examine the cervical margin of a filling and I don’t want to see the rest.” I feel that the two maxims can scarcely be too often urged and *reiterated*: “Round the angles of your cavities,” that they may be perfectly filled, and, “Pay *diligent court* to cervical margins,” that their neutrality at least may be counted

on, if not their friendship, in our battle with decay and disease, that they shall not *entertain* our foes if they do not turn them away; and of all things do not, by slight and neglect, leave the gates of our defenses wide open and unguarded to the very citadel, for the unopposed pouring thereinto of our most destroying enemies.—*Dental & Oral Science Magazine.*

ARTICLE II.

Strengthening Rubber Dentures and Repairing Broken Plates.

BY F. E. HOWARD, D. D. S., GENESEE, N. Y.

Read before the Seventh District Dental Society of State of New York.

Doubtless we have all experienced difficulty in making repairs in rubber-work, satisfactory to ourselves and patrons, where rubber alone is used. In those cases where plates are slightly cracked, and those broken entirely in two, when repaired with rubber alone, are weak, or clumsy when strong, from the great amount of material used.

Now I propose to show how almost any kind of a fracture may be overcome, with a certainty, by the exercise of a little ingenuity on the part of the dentist, and without thickening the plate, leaving the denture still stronger at the point or place fractured than it was originally.

Rubber, as a general thing, gives good satisfaction to our patrons as a cheap base; but we often feel that additional strength would be desirable, and is often required, in many places where it would be objectionable to have the amount of material necessary for the strength required.

By the method I propose to describe, all rubber dentures can be strengthened and made nearly as strong as an entire metal plate, with comparatively little outlay, but often requiring no small amount of painstaking and nicety of manipulation. But in all communities there are a sufficient

number of appreciative people who are willing to pay one, in any department, for honest endeavor to increase their comfort and promote their welfare: and for this class some of you may have an opportunity of applying this method. It is my conviction that it will pay both dentist and patient to give it a trial, in some of the many cases that will be presented, and where it can be applied.

In strengthening new dentures or broken plates, I use gold or platina, either in the form of strips of rolled gold, or wire. This should be roughened or flattened, to suit the circumstances of the case, so that the rubber will take hold of it firmly. In strengthening new cases thinner bands can be used with greater safety than when repairs are to be made upon old work. The whole labial and buccal border may be strengthened, and such places in the palatal portion as are likely to have great strain upon them. In temporary cases, that have been worn a long time, where the alveola has become absorbed to quite an extent, leaving the strain upon the center of the plate, (as the hard palate is unyielding, and brought in direct contact with the plate at this line, under all circumstances,) we often find them broken entirely in two, through the center. Or, perhaps, a patient will insist on leaving one or two teeth because they are sound, (usually cuspid,) and have them fitted around; at their cut-out there is inevitably a weak point in the plate, which, if not strengthened by a strong band, is quite likely to crack, even though left clumsily thick in that quarter. In partial unders, where the molars and bicusps are to be replaced with artificial ones, a band should connect them, and rest against the lingual surface of the incisors and cuspids. This should be nicely adjusted, and can be fitted to a plaster cast, packed about with rubber, which will make such a denture strong, yet delicate.

In strengthening the alveolar border of uppers, the wire or thin strip must be bent to conform to the general shape of the cast, and packed in with the rubber, calculating to have but very little rubber between the bands and the cast.

By so doing, the case can be dressed down quite thin, and yet be very strong.

I shall only need to illustrate how I would repair a full case broken entirely in two, to make it plain to you all how it is done by this method, or exhibit the case I have with me, to make it more simple. Bring the broken pieces together, as they properly belong, and wax them in their position. Fill the palatal portion with plaster, and allow it to become firm and hard. Remove the wax, now that the pieces are attached firmly, and, with the engine and a wheel burr, run along the whole length of the break or crack; then sandpaper the polished surface slightly, so that the trace of a lead pencil can be seen; then mark out such places, extending across the broken part, on the palatal portion and labial border, as you desire to have banded and supported with new rubber. Now with the engine and a burr-wheel go over the ground marked out with a pencil; this gives an outline of the section to be cut out. Then, with a coarse round burr, these places are cut almost through, leaving but a thin shell of the old material. Undercuts and dovetails are to be obtained at such places in these cutouts as are strongest, in order to secure the new material.

In small partial cases this work can only be done after the parts are secured in plaster, and put up in the flask.

Now that the cavities for the reception of the new rubber and bands are all prepared, they should be filled with wax a little flush, so as to allow for finishing down nicely.

A piece of gold should be selected for the cutout on the labial border, about one-fourth of an inch longer than is required to fill the cavity in length, and about one-eighth of an inch at each end should be bent at a right angle, giving it the form of a bracket. This should be pressed into the wax, and occupy the same position you desire it to have in the rubber; a conical roll of wax should join this, and extend directly down to the cutting-edge of the teeth. One end of this will be at the surface of the plaster in one section, and form the avenue through which the rubber is forced to

the place we wish to mend. The projecting ends of the gold band are held by the plaster.

Oil over the whole of this section ; adjust the flask rim ; fill with plaster ; separate the section ; remove what wax you can conveniently with the wax-knife, and put the case in water, and have it boil. Now, with a syringe, (I use a common rubber syringe, kept for this purpose alone,) the wax is forced out of every undercut and depression, leaving it perfectly clean. The case is then removed from the water, and such pieces of rolled gold-plate or platina are cut as will drop into the cavities easily on the palatal surface. These are spurred or roughened, that the rubber may take a firm hold. Then, by warming a piece of rubber, make it thin ; stretch it across the cavity, and press the band well into the cutout, then cover with another piece. When the places are all filled up, the case is ready to vulcanize.

When the case is removed from the vulcanizer, it is finished off in the usual manner. Occasionally the gold will be seen at different points when finished, but it only serves to show how securely the case has been repaired. It secures to the denture strength that cannot be had in any other way.

Partial plates can be strengthened by this method, and an isolated tooth can be supported and made as strong as though it were one of a section of teeth, by simply cutting a strip of gold and bending it with plyers to conform to the general shape of the cast ; imbed it in rubber at its proper place, and vulcanize it in that position.

I have had occasion to strengthen and repair celluloid plates in about the same manner ; and by coating the surface desired to be united, with celluloid dissolved or cut in spirits of camphor, they unite into an homogenous body.

By this method of strengthening and repairing celluloid plates, we are enabled to make a success of many cases that would otherwise be weak and doubtful.—*Dental Office and Laboratory.*

ARTICLE III.

Diagnostic Value of the Soft Palate, as Compared with the Tongue, in Certain Pathological Conditions.

BY WM. ABRAM LOVE, M. D., ATLANTA.

In the current medical literature of the day—in the authorized text books of our schools, and, more particularly, in the standard works of the older writers, much stress is placed upon the appearance of the *tongue*, as an index to certain pathological conditions of the system. In an especial sense were these varied appearances regarded as indicative of the condition of the stomach, the intestinal canal, and the hepatic secretions. That these appearances were sometimes erroneously interpreted, was very vividly impressed upon my mind, in my early professional life, by a foot-note, in a small, but valuable work, then recently from the press. I may be excused for quoting that foot-note, in its entirety, in this connection, as it will serve me a purpose, just here, and may, as it has me, serve others a purpose, elsewhere.

In describing, for illustration, a case of “*clavus hystericus* of the head, kept up by inanition,” the writer says [Billing’s *Principles of Medicine*—Amer. Edit., 1842—p. 220-1.]: “—there was no fever; the pulse was jerking, as we find after hemorrhage (repeated blood-letting,) but not firm; the tongue not foul, but white, as we always find it with an empty stomach.” Then comes the foot-note:

“I say, always; and there is not a more common error, than to consider this natural appearance morbid. Thus, persons who are in the habit of thinking themselves bilious, and taking physic, look at their tongue when they rise in the morning, and find it white. A good breakfast will make it look red, unless they take a dose of salts, Seidlitz powder, or, sometimes, even whether they do or not. The same person will, perhaps, put out the tongue before a looking-glass, just before dinner time, and, seeing it white,

forego a part of a wholesome meal, which would bring the tongue to the natural color of redness, which it assumes after eating, from its natural paleness before eating, unless they be gourmands and hypochondriacs at the same time; in which case they will run the hazard of eating, and take a caromel 'peristaltic persuader' afterwards. I have been, constantly, in the habit of warning my young medical friends to consider, when they see a white tongue, what time of day it is, and *not to purge* for merely a white, or, more properly, a pale tongue.

"The tongue is constantly very properly inspected, in disease, as it affords an evidence of the state of the mucous membrane of the stomach and bowels with which it is continuous. In health it is not of a bright red, but has a pale bloom on its surface, in consequence of the tips of the villi or papillæ being less injected with blood than the lower parts; when the stomach is empty, it contains less blood, its villi are, of course, paler, and those of the tongue are nearly white; but observe, the tongue is moist; whereas, in the beginning of synocha or pleurisy, or other inflammation, the stomach is empty from anorexia, and the tongue is white; but it becomes dryer than from a mere empty stomach, and more or less coated, arising from the evaporation of the watery parts of the saliva and mucus of the month, which leaves the membrane indued with a more viscid covering than natural. After eating, when the stomach is in a state of healthy activity, the tongue becomes redder; but still it is not of a bright-red hue, which only takes place when the membrane of the primæ viæ is in a congested or inflamed state, as in dysentery, in phthisis when colliquative diarrhœa exists, at the termination of typhoid fever when there has been (in reality) gastro-enteritis or inflammation of the glandulæ agminatæ, etc.

"In the progress of severe fever, when the secretions are suspended, the tongue becomes dry, and the mucus which does exist dries, and forms a brownish or blackish crust, and the papillæ become so much shrunk down to the level of

the rete mucosum, that when the tongue becomes clean, on recovery, it looks glazed and smooth, and some time elapses before the papillæ rise up again.

"In chronic affections, accompanied with a languid and flabby state of the *primæ viæ*, a discolored state of the mucus occurs, constituting, what is called, a foul tongue."

Few more concise descriptions of the pathognomonic indications presented by the appearance of the tongue, will be found in our medical literature; but these relate more particularly to the appearance of the upper surface of the tongue as indicating *physiological*, or *pathological* conditions of the mucous membrane of the stomach and intestinal tube, yet the tongue is in many cases—as well as other portions of the oral cavity—an indicator, pointing, to many and varied pathological conditions of the general system, and of special tissues. As a contribution illustrative of this may be mentioned "*a peculiar appearance of the tongue in malarious diseases.*"

While the appearance of the tongue indicative of physiological and pathological conditions of the alimentary mucous membrane, presents itself on the upper papillated surface—the *border* and *outer edges* present the peculiarity indicative of malarial toxæmia. It consists in a peculiar *pectiniforme* appearance of the edges of the tongue, as though these edges had been under the pressure of the sides of the teeth of a comb—just as, in certain "languid and flabby" states of the *primæ viæ*, we find the edges presenting a crenated appearance, produced by the indentations resulting from the pressure of the teeth in the oral cavity—just within this *pectiniforme edge*, making the outer border of the upper surface, of greater or less width, in different cases, or different degrees of malarial toxæmia, there appears a *smooth margin*, both the *pectiniforme edge* and the *smooth margin* presenting a *clearer appearance* and a *brighter hue* than the other portions of the surface of the organ. For over thirty years, in an active practice, most of the time within malarial districts, these peculiarities of the edges and borders of the

tongue have been marked, as indicative of malarial poison, not only in the malarial fevers of the paludal districts, but in the protean forms and varied complications through which the effects of this subtle poison may be traced. While it had been my good fortune, in early professional life, to detect this condition as a pathognomonic indication of malarial poison, which experience, until this day, has more fully confirmed, and, while I have profited by it during these long years of professional toil, still, to my friend, Dr. T. C. Osborne, of Greensboro, Alabama, is due the credit, of having first called the attention of the profession to the fact, through the recognized channel of communication—the medical press (*vide Trans. Amer. Med. Assoc.*, 1869,) and I take pleasure in awarding him this credit, with the expression of regret, that his paper did not fall into the hands, or attract the attention of more of my professional brethren.

Dr. Osborne has preferred the term "*crenated edge*" in his description given in his paper. This, to our mind, without an illustration (which he presents,) would more nearly convey the idea of the indentations produced by the teeth in the oral cavity in the "flabby" conditions alluded to above, when the term "*crenated*" is applied to such a body or organ as the tongue; we have, therefore, held to our original descriptive term, *pectinited*, or *pectiniforme*, with the explanation, illustrative, given above.

These allusions to certain conditions of the tongue, as indicative of certain pathological conditions of the *primæ viæ*, or of the general system, have been made more particularly as introductory to, if not illustrative of, certain other conditions often presented in another portion of the oral cavity, and their value, in a diagnostic, as well as a pathological and therapeutical point of view. We allude to—

THE VALUE OF THE APPEARANCE OF THE PALATINE VAULT AND
SOFT PALATE IN DIAGNOSIS.

On the sides of a median line drawn from the point of the alveoli separating the two central superior incisor teeth

to the centre of the base of the velum palati, there are two elliptical, or almond-shaped, spaces, where the inferior surface of the palatine bones are covered with only periosteum and and mucous membrane, constituting, we will say, *the palatine vault or dome*. An extension of this membrane backwards, united with a like extension from the superior surface of the bone, or the floor of the nasal cavity, to the velum palati and anterior half arches, constitutes *the soft palate*—the palatine muscles, to some extent, taking the place of the palatine bones. This muco-periosteal and muco-musclar membrane is supplied with blood by the superior palatine and naso-palatine arteries, whose branches anastomose with each other and with their congeners. Their capillaries, particularly in the *palatine vault*, though exceedingly numerous, are, at the same time, exceedingly small, so much so that they allow of the passage of blood corpuscles to only a very limited extent in their normal condition, as in the conjunctiva, sclerotica, and other membranes and tissues that circulate, alone, liquor sanguinis, normally, and blood corpuscles pathologically. The great vascularity (capillary) of both the mucous and the periosteal membrane, together with the great transparency of the same and the bony and muscular base, gives us an opportunity of noting conditions that are of vast importance, both pathologically and therapeutically. Among these may be enumerated :

1st. The color of the liquid sanguinis.

2d. The arteriolic tension, or atony, in resistance or non resistance to the passage of blood corpuscles; or, in other words, by the inspection of these spaces we are enabled to approximate an estimate of the amount of coloring matter (biliverdine) tinging the non-corpuscular blood tissue, in the first place, and, secondly, we are enabled to approximate pretty correctly the "working" of the vaso-motor nerve system, particularly along the line of the alimentary canal. (This does not apply, we would parenthesise, in cases of local irritation in these palatine tissues, except so far as relates to these local membranes.)

Practically, these facts are of much advantage, and, for over a quarter of a century, I have been in the habit of taking advantage of them as guides in the diagnosis and treatment of disease. During this period, the rule has been, with me, to examine the roof of the mouth as regularly as I have occasion to examine the tongue. So constant has been this habit with me, that I am frequently asked the question by medical students: "*Why do you always examine the throats of your patients in the clinics?*"

I have found that in that condition of the system to which the term "*bilious*" has been applied, this muco-periosteal membrane invariably presents the yellow hue of lighter or deeper shade, indicative of the existence of *biliverdine*, in the liquor sanguinis. This yellow tinge or color will vary in different cases, or at different times in the same case, from the lightest canary, to the deepest orange or saffron, and the depth of shade will indicate the amount of "*biliousness*" or the extent to which biliary coloring matter is retained in the blood tissue. As this tinge deepens, the skin becomes more and more sallow, approaching towards that appearance exhibited in mild cases of acute jaundice. In all cases, under any and all circumstances, where bile has been "re-absorbed" or, where it has not been eliminated from the blood—in malarial toxæmia—in duodinitis—in biliary cystitis—and in every condition of the system, where, by its existence in the liquor sanguinis, or where, as a result of such pathological condition the tissues become tinged, the color will present itself first and deepest in the muco-periosteal membrane in the mouth as designated above. The only condition obstructing its appearance, will be where there exists engorgement, irritation or inflammation, distending the minute capillaries to such an extent as to admit of the blood corpuscles, when the redness of the tissue swallows up the fainter yellow hues. By examining this portion of the roof of the mouth we gain a better knowledge of the condition of the portal system and hepatic action, than the tongue indicates as to the condition of the stomach, in the

circulation in its mucous membrane or the action of the gastric glands.

In all that class of diseases in which the general condition of the system demands the use of remedies known as *cholagogues*, of whatever kind, and in all forms and complications, experience has taught me that I risk nothing in saying that the muco-periosteal membrane in the roof of the mouth, will by its yellow tinge invariably indicate the necessity for their administration—*per contra*, I may say, with equal confidence, that the absence of this yellowness indicates, with equal certainty, that such a class of remedies have been sufficiently used, or are not needed. For twenty-five years this has been my guide, and I do not feel to-day that I have ever been misled by it. Other members of the profession, whose attention I have called to the fact long years since, tell me that as a guide in their daily professional work, it has served them the same good office. Attention to it will do away with much of the use of, or rather abuse of calomel.

In other pathological conditions than this, the appearance of the palatine surface will serve us a good purpose as a guide. Thus, for example: in all that class of diseases known as *exanthema majora*, the eruption makes its appearance in the roof of the mouth, from *twelve to twenty-four hours*, and, in many instances, longer, before it appears on the cutaneous surface. In *small pox*, in *scarlet fever*, in *measles*—in all their grades—the eruption may be looked for, with confidence, in this region long before it can be detected at any other point, and, as the eruption is often the last link in the chain of evidence necessary to decide a question of diagnosis, the knowledge of this fact will always equal the importance of the question at issue—it has, in some instances, served me a valuable purpose.

In *intestinal irritation* and inflammation, in the approach progress and decline of enteritis and dysentery, the soft palate is a better indicator as to the condition of the intestinal mucous membrane than the tongue.

The effects of the retention of the effete matters, biliverdine and cholesterin, are, depression of the nervous system, interrupted functional action, frequently depression of cardiac action, neuralgia, and a variety of pathological symptoms, not necessary to dwell upon in a paper like the present, the sole object of which is to direct attention to the soft palate and its value in diagnosis, particularly in bilious derangements.

ARTICLE IV.

Mechanical Dentistry.

BY C. S. BUTLER, D. D. S.

Read before the Eighth District Dental Society of the State of New York, held in Buffalo, April 30th, 1878.

In selecting subjects for discussion at this meeting, our members seem to have entirely overlooked the very important one of Mechanical Dentistry; and as it has fallen to the lot of your Committee to fill out the programme, I have selected this as a topic upon which to say a few words. Any by way of introduction, allow me to remark that I am thoroughly conscious of my inability to present you anything new on this subject, or advance ideas differing, probably, from those held by every member of this Society. But to my mind the subject is a very important one, and the main object of my bringing it before you will be found in the deep interest I feel in this direction, and the apparent neglect it is receiving at the hands of the profession.

During the few years I have had the honor of belonging to this profession, I have often been forcibly struck with the comparative ease and unconcern with which men divest themselves of this whole matter, devoting all their time and all their energies to the possibly more inviting field of *Operative Dentistry*. Indeed, to one unacquainted with the routine of a well regulated dental office, this whole subject of Mechanical Dentistry would seem to have no con-

nection whatever with the dental profession, so few and careless are our considerations of it in our public meetings. There is a saying as true as it is old, that "from the abundance of the heart man speaketh;" and it does seem to me that if we come together here from year to year with the importance of this branch of our specialty resting upon our consciences, we will enter upon its discussion and go away greatly benefited for having exchanged our thoughts.

Understand me, gentlemen: I am not saying you do not give this matter due consideration in your offices. I am speaking simply of our meetings where every subject pertaining to dentistry ought to be fully and freely discussed; for it is only as we turn them over and over again, viewing them from every possible standpoint, that we may expect in any degree to attain the object of this organization, *i. e.*, the "dissemination of knowledge among its members." There is no subject too slight for our consideration, and no branch of our profession so unimportant as to delude us into the belief that there is no more to be learned on it.

I can never forget the impressions made upon my mind, while in college, by the very indifferent manner in which the students there, almost without exception, treated this subject of Mechanical Dentistry. I cannot now re-call one, out of the one hundred and fifty there present, who seemed to have any idea of this matter at all, or even a thought that it was related to the profession of dentistry. The idea of ever doing mechanical work had never entered the brain of many of them, and to be compelled to spend an hour or two in the laboratory each day was simply *awful*, while the requirements of the institution in this direction were almost enough to drive them from its lectures. Many of them attained high proficiency in Operative Dentistry; yet out of the forty-five graduates, I was told by the Professor, there was scarcely one able to pass a creditable examination in Mechanical Dentistry.

Now, gentlemen, what does this argue? Simply that there is neglect somewhere. It may not be in my office, it

probably is not in yours; but it is somewhere, for those one hundred and fifty students all came from dental offices, and many of them from the best in the land. And what are we going to do about it? Shall we calmly fold our hands and sit idly by and see this branch of our chosen profession sink beneath the waves of indifference and charlatanism? I appeal to each of you, gentlemen, have we not a responsibility in this direction?

It requires no argument to convince every one of you that Mechanical Dentistry is a very important branch of our specialty. The term implies far more than one could expect to reach in a single paper. Its demands are on every hand, and its effects seen in nearly every household. It is a mistaken idea that the time is coming, as some men suppose, when there will be no demand for it. On the contrary, its demands are bound to increase; for notwithstanding all our boasted progress and comparative skill in saving the natural teeth, owing to the constantly degenerating condition of the human family, millions of these organs must be sacrificed every year, and their places supplied with artificial dentures. There is no dodging this point, and it behooves men to shape their studies accordingly. It is simply idle talk to say, as Dr. Smith, in the *Dental Register* for August, 1875, does say, that a young man without much literary preparation may enter the laboratory of some "surgeon dentist," and in six months' time acquire a sufficient knowledge of the business to pass himself acceptably with the people, fully meeting their expectations, or satisfying their limited ideas of what a mechanical dentist should be. The public demands more than this, and I for one will gladly welcome any measure which will take this matter from the hands of the irresponsible, and lodge it where it ought to be, with those accountable for what they do.

He who would most successfully practice this branch of our profession must be not only a good mechanic, but a good student as well. He should have a thorough knowledge of anatomy, surgery, physiology, physiognomy, chem-

istry, mineralogy, metallurgy and dynamics. These qualifications may be briefly stated as follows: *Surgery*, as it relates especially to all operations pertaining to the preparation of the mouth and the restoring the same to a healthy condition; *Mechanism*, or all that which pertains to the manual execution of the work, including impressions, models, dies, plates, mounting of the teeth, etc.; *General Chemistry*, or at least Special Chemistry, as it relates to the properties of the various substances used for artificial dentures, and the mode of preparing and compounding the different minerals, fluxes and oxides that are used in forming dental substitutes; *Metallurgy*, including the different processes of working, alloying, refining and adapting the various metals used in this branch of our profession; *Anatomy*,—and upon this head I would have the mechanical dentist the possessor of a thorough knowledge of the bony framework and the muscles, nerves, arteries and veins of the head and face, including the different locations, connections and functions of all the parts which give form and expression to the features of the face,—for upon this knowledge depends the restoration or distortion of the features of every person operated upon for an artificial denture; and lastly, that artistic qualification which combines all the preceding requirements, and constitutes the acme or crowning point of the whole.

It has been truly said that "the man with the best judgment is always the best dentist," which being interpreted is, the man with the best knowledge of not only the face and its surroundings, but of the whole human economy, is the best dentist, and this knowledge can be attained only by long and earnest study, together with a thorough and rigid discipline preparatory to entering upon the practice of his profession. True, there are those without this detailed knowledge of the human system, who after years of experience become expert and excellent mechanical dentists; but unfortunately, gentlemen, these are not they who labor in this direction, but prefer rather to intrust the whole mat-

ter to the judgment and skill of their inexperienced assistant. We hear a good deal in these days from members of our profession in regard to so much of this work going into the hands of quacks; and, as if to shift the responsibility for it, they say people have come to desire cheap work and low prices, and something must be done to protect ourselves against this perverted desire of our patients. Indeed, some have become so much alarmed for poor, deluded humanity (or themselves) that they would compel every man to become a graduate, or at least a licentiate, before he shall be privileged to practice dentistry at all; and to strengthen themselves in their position, hold up to our gaze the delightful effect legislation has had upon the profession in other States. Ohio is cited as a very paragon in this direction; and just as we are beginning to believe there is not a quack in the entire State, there comes to us in the *Dental Register* for April, 1878, the following advertisement:

SPECIAL NOTICE!

Mechanical Work for the Dentists.

We have made arrangements with mechanical dentists here to put up all styles of dental work for our customers at very reasonable prices. *The impression of the mouth or model from it, and the articulation, with sample of color and style of tooth, is all that need be sent.* Address——, Cincinnati, O.

What shall we say then? That there is nothing which savors of empiricism in an arrangement which not only permits but solicits my taking an impression, selecting a sample, and sending the same two or three hundred miles away, to be returned to me again in due time polished and ready for the mouth?

Well, gentlemen, this may be progress, but it is not dentistry; and I for one feel free to confess that I have very little sympathy in this whole movement for legislation in our State; for I hold this to be a free country, and am willing to grant unto every man the same rights and privileges I would require from him.

What we desire is not legislation, but education. Education in the profession and with the people; and not, I ap-

prehend, until we have this, will an appreciable benefit be derived, even though we enforce all the laws in Christendom. What we want is, the best men in the profession to step forward and place this branch of our specialty on an equality with the operative; to lift it from the mire of indifference and carelessness which has so characterized it for the past few years, instructing their patients in the better methods, and demanding from them a remunerative fee. In this they hasten a re-action so long needed, and at the same time administer a rebuke to those who have merely "picked it up," and are loudest in mouthing their own achievements.—*Dental Advertiser*.

ARTICLE V.

Substance of Lectures on Gold.—Continued.

BY PROF. HODGKIN.

REFINING.—We have seen, in previous lectures, that it is of the utmost importance that our gold, at least for certain uses, should be absolutely pure, and approximately so for any use connected with dental mechanism. If it be a fact that so small proportion of some of the baser metals as has been stated, is sufficient to render gold unmalleable, it is of extreme importance that we should keep these from our gold, and if accidentally contaminated thereby, of equal importance that we should possess some means of eliminating these impurities. Such knowledge cannot come amiss to us if only on rare occasions we have use for it, and if, as we all hope, the time is coming when gold plates will be more commonly used than at present, our knowledge of its manipulation cannot fail to be of service to us.

Reverting to the previous lectures, you will remember that we made two general divisions of the dental scrap found about our offices. One, in which the impurities were only mechanically mingled with the gold, the other in which

they were melted or alloyed into its substance. It will readily occur to you that in the first case methods may be used for removing extractions substances which would be ineffectual in the other. We have only to apply a magnet for example to the mass, and thus remove any particles of iron, and we have only to use some solvent of copper, tin, lead, &c.,—something which, while dissolving them, does not dissolve the gold, to reduce these to a state of solution, that they may then be washed out. Our knowledge of chemistry can be made available here, and indeed you will find that this study, which some of you seem to think is rather out of place in practice, and dry study under any circumstances, is one of the most useful and entertaining of any with which you have to deal. It is important to know what acids act on certain metals, and the result of their action, and also what is the result of the combination of certain acids. If, for example, we wished to remove iron by another means than the magnet—and I advise other means for the reason that particles of gold are removed along with the fragments of iron—we should know the most ready solvent of iron, and also the product of solution, and the steps necessary to remove the solution from the gold. Again, we find that where lead and tin and zinc are present, it is not a matter of indifference which one of the acid solvents of those metals we use, and it is necessary also to know what will dissolve these. Zinc and iron are acted on by hydrochloric acid, and the salts of these metals are soluble, and this acid will act likewise on the silver, if any be present; but while the first-named salts are soluble and may be washed out with clear water, the silver solution is insoluble in the water, and so is as much in one way as if it had not been attacked at all. Again, while some metals, as iron, zinc, are attacked by sulphuric acid, this acid will not, at least in anything like the dilute state in which we use it, attack lead. It is important then that this part of chemistry be well understood by us, else each step is in a fog; and in operations involving such a precious metal, as the one we are now deal-

ing with, accuracy is essential; accuracy both of knowledge and manipulation. May I say again that *theory* must precede *practice*; we must know before we can do, and the man who depends on his practical knowledge is, when he leaves the ground of that knowledge, helpless, except so far as he may blunder and stumble on the things he wants. I tell you that he who is fully armed with scientific knowledge is superior to chance, and is able to hold the reins of nature's goings.

Nitric Acid ($N_2 O_5$) is perhaps our most convenient acid in removing the impurities that are mechanically mingled with the gold. It acts on all the metals except the gold and platinum,—that is of those we are likely to find in our present search; understanding that we are now only seeking to get rid of the metals, not melted or alloyed with that we are seeking to purify. The action of the acid may be greatly hastened by heat, using a sand-bath for this purpose. Care should be taken that no hydrochloric acid is present, as this mixture acts on the gold, as we will see further on.

Two general methods here claim our attention for the purification of gold; one partial and imperfect, but largely useful to jewellers and others, and to some extent useful to us; the other perfect, exact, a strictly chemical process, giving us absolutely pure gold. The first is that of refining by fire, or the "dry process," as it is usually called; the other is refining by acids, or the "humid process." By means of the first, which involves only the use of a crucible and a furnace, and requires only the use of a few simple reagents, we are enabled to get rid of all the base metals, but retain the platinum and silver, if these are present; while by the other, every metal can be removed and the gold left in its pure state, ready for the foil-beater. We will take up the first method and briefly describe it. Its success depends on the principle that base metals are oxidizable, while the noble metals are not; and the process is simply that of melting the mass of alloy in a suitable

crucible and oxydizing the impurities, if susceptible of this.

Any ordinary stove will answer our purpose. We find sufficient heat in the office or parlor furnace, and if it be summer time a small preserving furnace will answer. The small forges which are made for this and for other purposes, and which are found in the back shop of almost every jeweller, answer well; and the apparatus recently designed by Mr. Fletcher, of England, is doubtless excellent. With a good blow-pipe a considerable mass of gold may be melted on a piece of charcoal, and although this substance is inadmissible for this purpose, in the process under consideration, a substitute can be readily made for it by carving out a cavity in a piece of carbon from the gas retort, or making a shallow dish of plumbago, or even of sand and plaster, though there may be some risk of cracking in the last case. Molten gold when let fall, scatters into exceedingly minute particles, and the probabilities are that little of it would be recovered if spilled. For any mass over one-fourth of an ounce it would be best to trust the crucible and furnace. The crucibles are (1) Plumbago and (2) Hessian, so-called, for most of those we see for sale at the depots, are made in this country,—and are excellent. Those made of plumbago are best, as they will stand any amount of heat, and it is said bear frequent reheatings with little risk of cracking, which cannot be said of those made of sand and clay. For ordinary dry refining however the Hessian crucibles are most convenient, as it will be found advantageous to break the crucible after cooling, the accumulation of borax and other substances on the surface rendering it difficult to pour the gold.

The choice of fuel is of some importance. Coal of a mineral origin is often contaminated with sulphur, and this element is greatly in the way in our work, making the gold brittle and unmalleable. Bituminous coal, unless made into coke is inadmissible. A clear fire of anthracite is excellent; it is well to let it burn for a while before using it,

that any sulphur fumes may pass off. Charcoal is best perhaps, as being free from any suspicion of sulphurous taint; that made from hard wood is best. The crackling of charcoal fires, made of pine and chestnut, is annoying. The gun powder makers use willow charcoal, from which the bark has been removed previously to burning.

Whatever fuel is used it is well to see that the crucible sets firmly in the midst, and that it is well supported at the bottom. A solid lump of charcoal is useful for this, setting the crucible on it; or it may be set on the bottom of an inverted crucible. A pair of suitable tongs for handling the crucible are necessary adjuncts of the furnace. The fuel should be placed well around the crucible, as in pouring the metal it is of importance that the vessel should be hot all the way to the top. If the gold comes in contact with the lip of the crucible, with this last at less than red heat, it is instantly chilled, and its flow in part arrested.

A glass or porcelain rod—the latter is best—is useful to stir the molten mass, and bring the impurities successively to the surface for exposure to the reagents. An iron rod well coated with borax, by heating it in contact with this substance, will answer.

The reagents are used with a view to their chemical action, the destruction of their combinations, the liberation of their constituent elements and the action of the nascent oxygen, chlorine, &c., on the substances it is designed to eliminate from the mass. A knowledge of the chemistry of this process is so interesting that we will take it up in a separate lecture.

ARTICLE VI.

Thymol.

The essential oils of thyme, of American horsemint, and of the *Ptychotis jowan* contain a substance, a homologue of phenol or carbolic acid, having the composition represented by $C_{10}H_{14}O$, and known as thymol. For more than

two years this has been used by German surgeons, and is now being introduced among ourselves. It was discovered in 1719 by Caspar Neumann, examined chemically by Lallemand and Leonard Doveri, and first used to deodorise unhealthy wounds by Bouillon and Paquet, of Lille, in 1868. In 1875 several German surgeons published investigations of its antiseptic properties, which are estimated to be from 4 to 25 times as powerful under certain circumstances as those of carbolic acid. Thymol is a crystalline, nearly colourless body, with a pleasant odour and an aromatic burning taste. Its specific gravity is 1.028, and it melts at 44° C. It dissolves in 1,200 parts of cold water, 1 part of rectified spirit, 120 parts glycerine, and in $\frac{1}{2}$ part of caustic alkalies. Fats and oils also dissolve it readily. It is prepared from the oils of either of the plants before mentioned, but pharmacists should beware of experimenting on English samples of oil of thyme, as but few of them are genuine, or, at least, contain any thymol. The oil is said to yield as much as 50 per cent. of thymol on the Continent. Thymol can be manufactured from these oils by treating them with an equal volume of a 20 per cent. solution of caustic soda, separating the alkaline liquid, and neutralising with hydrochloric acid, when the thymol will float to the surface. It may also be obtained by submitting the oils to a low temperature for a few days, when the thymol crystallises out. Its powerful antiseptic action, exceeding under some conditions that of carbolic acid, its small activity as a poison—about one-tenth of that of carbolic acid—and the absence of irritating effect when it is applied to the skin, all point to its use as a substitute for carbolic acid in the now well-known antiseptic treatment of surgical cases elaborated by Professor Lister. This substitution has been made with great success by Professor Volkmann, of Halle. For the spray solution, this gentleman uses a mixture of 1 part thymol, 10 alcohol, 20 glycerine, 1,000 water; but we understand that a solution in water only, which will not deposit, may be made by adding 1 part of thymol to 1,000

of hot water. For the gauze dressings used by Professor Lister, others were substituted, made by saturating 1,000 parts of bleached gauze with a mixture of 500 parts spermaceti, 50 resin, and 16 of thymol. This prepared gauze is extremely soft and pliant, and, to use the words of the reporter, sucks up blood and the secretions of the wound like a sponge. The fibres of the gauze being impregnated with spermaceti, cannot, of course, become saturated with the secretions, so that they do not become stiff. Thymol has been used for various skin diseases by Dr. R. Crocker, but the results of his experiments have not yet been published. As an internal remedy, thymol does not seem to make much way. It has proved useful in diseases of the stomach accompanied by fermentation, and Mr. W. H. Stone reports in the *Medical Times and Gazette* that he has found it useful in cases of chorea, one form of which is St. Vitus' Dance. The present cost of thymol is about five times that of the best carbolic acid, but as one part of the former seems to do as much work as 25 parts of the latter, the advantage of price is on the side of thymol.—*Chemist and Druggist.*

ARTICLE VII.

*Remarks on the Cure reported by Dr. Geo. B. Reynolds,
(Virginia Medical Monthly, June, 1878,)—the
Restoration after Necrosis, and Re-
moval of the lower Maxilla.*

BY PROF. HODGKIN.

[The article in question was published in a former No. of this Journal.—EDS. AM. JOUR. OF DENTAL SCIENCE.]

I now turn the case over to my friend and your teacher, Prof. Hodgkin, who will tell you what can be done toward replacing with artificial substitutes, the boy's lost teeth.

PROF. HODGKIN:—I am sure that I can add little of interest to this case by speaking now, after the talk which Dr. Reynolds has given you; and indeed I am not sufficiently familiar with its details to do so. He has said all

that can be said about it, and it only remains for me to join with you in admiration, of this conservative Surgery of his and of his associate, Dr. Trist, and to tell you how to make a lower artificial set of teeth for this boy.

But I cannot help calling your attention to the wonderful reproductive power of nature, as evidenced in this case. It shows you as no other evidence probably could, the function of the periosteum, which in this case was left intact, and to remark upon the nice discrimination which kindly nature shows, when her best efforts are not thwarted by man's bungling. How wonderful is the conservatism which allows a dead bone to slough away from its periosteal attachments, to sever its connection with the ligaments, which you know are so firmly secured as to permit absolute fracture of the bone before this will tear away; to preserve, although bathed in pus for months, this delicate membrane around the bone, and leave its functional activity unimpaired. I cannot express how I admire all this, and wonder at it. If any ankylosis are present, if any notable deformity, the case would not be so striking; but here we can almost perfect reproduction, for with the exception that the bone seems to be a little smaller, and you see that the chin is a trifle short, and the teeth as a matter of course inspiring, all seems perfect.

Of course we understand that in this case, the care of the teeth is final, at least so far as the teeth which were erupted or in process of eruption, are concerned. This boy has a single lower molar—apparently the second—which has erupted since this operation on the right side. The wisdom tooth may and probably will melt in due course of time. But the germ of the wisdom tooth, on the left side, must have been removed with the bone, as the whole of the jaw, including the ramus, was dissected out.

There is one other point, I wish to bring out. You observe that this jaw, in all respects resembles one rendered edentulous by accident,—it is just like one from which you have removed all the teeth and in which the ordinary

absorption and disappearance of the alveolus has occurred; and yet this jaw has not been subject to such accident, but is simply a maxilla, minus teeth. It teaches us that the alveoli are merely incidents of dentition, and are in no way inseparably associated with the development of the bone. They have no more to do with the progress of the growth of the maxillæ than the crusts of earth, which are pushed up around the plant erupting from the earth has to do with the shape of the earth. It proves that the teeth are in no way concerned in the development of the jaw—do not aid in its expansion,—for here we have a jaw of normal width, developed without teeth. The shortening of the chin, which is slight, can be accounted for by the contraction of the muscles, and the only wonder is that it is not greater. Here in this show-case are casts of the upper and lower maxillæ, of a man who assures us that he had neither temporary or permanent teeth between his lower canines, and yet you see that the space between these canines is amply wide for the accommodation of such teeth were they present;—his jaw was as fully developed at this point without teeth as with them.

This subject may thus throw some light on the vexed question of the reproduction, or the failure of reproduction, of the lost alveolus,—lost by wasting, or other cause. It may teach us that, as this second bone was without alveoli, that nature does not attempt the restoration of this process when lost, and certainly we see in practice that this is true, at least so far as the thinner and now delicate portions of it are concerned. I do not believe that the alveolus of a tooth is ever restored; and I am not even sure that the septum of bone between the molars, when removed by accident or disease, grows again. I am watching a case now with great interest, in which the septum of bone between the first and second superior molars has wasted in consequence of, as I think, an incautious use of arsenic, (I did not find it there!)—watching to see if it grows again. I am anxious that it should, but hardly believe it.

This boy must have a lower piece made for him. I rather incline to the opinion, that as this bone may grow still more, it would be well to wait awhile until the fullest possible development takes place. We have then, what is rare in replacement, the work of making a lower set to articulate with the upper natural teeth. I recollect to have seen but one other case, where this was necessary, as usually the case is reversed.

Boston, July 16th, 1878.

To the Editor of the Amer. Jour. of Dental Science:

DEAR SIR:—The time of annual meeting of the American Academy of Dental Science, has been changed from the last Monday in September, to the last Wednesday in October, believing this to be a more favorable time for securing a large attendance.

Members and others will please take notice of this change.

GEO. T. MOFFATT, *Corresponding Secretary.*

EDITORIAL, ETC.

English Dentistry and the Chemists.—In the *Chemist and Druggist* is an extended report of the visitation by a delegation of druggists to the "Promoters of the Dental Practitioner's Bill," with a view of obtaining some modification of its terms so far as they relate to the practice of dentistry by druggists. The effect of the bill as drafted, it was claimed by the delegation would be "to prevent all those chemists and druggists who were at that

time practising dentistry from continuing to do so, or at all events from recovering any fee or charge, in any Court, for the performance of any dental operation, unless they obtained their registration under the Act, for which there seemed to be no provision in the Bill ; on the contrary, they were by the fifth clause debarred from registration, not being "licentiates in dental surgery or dentistry of any Royal College of Surgeons in the United Kingdom, or of the Faculty of Physicians and Surgeons of Glasgow ; or at the passing of that Act *bona fide* engaged in the practice of dentistry, either separately or in conjunction with the practice of medicine or surgery." This prohibition would be very severely felt by many of Her Majesty's poorer subjects throughout the kingdom, and it would be a source of great inconvenience to all classes of the public residing in country districts where no professional dentist was to be found."

Apparently the framer of the bill had ideas with regard to extracting and filling which are shared in common with a great many in this country, including medical practitioners, and not a dentists, for in his reply he goes on to say that the intention few of the bill was not to interfere with such simple operations as extracting or stopping teeth, which did not require any extended period of study, being performed by chemists. Certain things were allowed and no penalties attached, yet they were to be discouraged. The object of the Bill was not to prevent such simple operations as he had referred to being performed upon anyone who liked to submit himself to the same, but to prevent a person holding himself out to the public as being especially qualified as a dentist when he was not so qualified.

There is a bit of irony in the allusion "any-one who liked to submit himself of the same." In England apparently they make a distinction between those who are *authorized* to practice dentistry, and those who are *allowed* to practice the same. The former have a right to collect a fee, the latter at the mercy of the patient's generosity.

The solicitor in this case took practical ground, when he said that "the proper test would be the candidate's fitness to perform dental operations, no matter where or by what means he gained such knowledge," and certainly this is a common sense

view of the matter. The anomaly of the Bill was that while it permitted the druggists to do these things, it rendered them liable to a fine if they advertised or exposed a sign.

English dentistry as a science is outstripping us, but the practice is, judging from these facts, hardly up to ours.

H.

A New Blow-pipe.—In the days of gold and silver plate, of backings and soldering, the skillful use of the blow-pipe was a *sine qua non* to successful dental mechanism. He who could not blow well, failed in the very point where success was most essential. Now-a-days, when plastic materials have so nearly taken the place of the metals, the use of the blow-pipe is almost obsolete, few of our young men having more than a theoretical knowledge of its uses; and still there is occasional soldering to do, if it only be to mend the work of some old dentist, which after doing good service for twenty or twenty five years is so good still as to only require the replacement of a tooth, or the resoldering of a backing. And it may be too, that, a fair representation to our patients of the utility and durability of a metallic piece may result in the adoption of gold by some one whose prejudices are against it by misrepresentation or ignorance. The best appliances should be in the hands of the dentist, and of these the old fashioned mouth blow-pipe is most convenient and available.

Lately Mr. Thomas Fletcher has made an improvement to the old-fashioned mouth blowpipe which is simple, cheap and effective, and adds wonderfully to its heating power. The change or addition consists simply of a coil or series of coils made in the pipe just before reaching the tip, by means of which the air from the mouth is highly heated before issuing from the orifice of the pipe. The arrangement adds greatly to the powers of this instrument and makes it much more effective. The superheating of the air from the mouth dries it thoroughly, rendering a bulb for catching the moisture from the breath superfluous. To all who have even occasional use for the blow-pipe, we can confidently recommend this instrument. H.

Conventions—Associations—Recreation.—By the time this number reaches the reader, the Pennsylvania State Dental Society will have held its Annual Meeting, at Bedford Springs, Pa., and the American Dental Association, the Southern Dental Association and the American Dental Convention will be in respective session at Niagara. Now that excursion tickets are sold so very cheaply, most, even of the poorer practitioners can afford to attend these meetings, and all will find them interesting and profitable. The vacation of even a week's absence from office labor will be beneficial, and the best thought of the profession is crystallized at these meetings. If occasionally there is wordiness and vagueness, remember that these speakers do not often get a chance to let out their accumulations, and there is much said that is good. To meet the representative men of the profession from all over the country, tends, as hardly anything else does, to broaden and elevate. Said a distinguished clergyman to the writer last year: "I am surprised at what I saw and heard at your convention. I had no idea that your profession as compared with others, was so scientific and of so cultivated an aspect. I think it is on a level with the highest; and I am proud to see so learned a body of men come together to discuss means for relieving human suffering." It is to be hoped that means may be set on foot to more thoroughly organize and consolidate the profession, and add to its *esprit de corps*. And it is well for those of the State Associations who are interested in their home societies, to go to these central gatherings and study their workings. We are sure that few come from these meetings without gain.

H.

MONTHLY SUMMARY.

Rules for Chloroform Administration.—Prof. Syme had given chloroform, he said, for many years without an accident. He attributed his success to two causes. First, he always used good chloroform, and second, he always gave plenty of it.

Antiseptics have no Action on the Blood.—Dr. Laborde has lately published his experience with antiseptics, of which the substance is as follows:

A dog having been made septicæmic by the direct introduction of septic blood into a vein, the femoral artery is laid bare, and its central end is placed in direct communication with the separated distal end of the femoral artery of a healthy dog. The second dog, which receives the septicæmic blood in this manner, becomes itself septicæmic. By successive "generations" produced by this operative procedure a blood is obtained containing the septicæmic poison in a high degree of intensity. In regard to the presence of organisms in this morbigenic fluid, Dr. Laborde remarks that "the blood of a dog infected by arterial communication has never, when attentively examined at different periods of the disease, exhibited the presence, in appreciable quantity, of microcytes—bacteria, vibrios, granular matter, etc.—not even in cases in which the blood primarily inoculated contained microzoa in more or less large numbers; so that we find ourselves in presence of a disease which can be transmitted indefinitely without the intervention of inferior organisms." In contradiction to the statements of Binz, the author found that quinine, even when injected in the highest doses compatible with life, neither acted as a preventive to the development of the disease, nor arrested it when it was produced. Similar negative results were found with chromic acid, carbolic acid, bichromate of potash, and permanganate of potash.—*Druggists Circular*.

Dangers from Horse back Exercise.—Dr. Montzel, in the *Annales Médico-psychologiques*, gives a description of the so-called "malady of the Scythians," a race who may be said to live on horseback.

The essential features of this disease are loss of virility at an early age, and an alteration in the skin of the face and body. The features resemble those of a woman, while the whole habits of life are changed, gradually approximating those of the opposite sex. The skin becomes wrinkled, the beard disappears, the body loses greatly in strength, and the patient often assumes the costume of a woman. The men among whom these patients are found spend a great part of their lives on horseback, and most authors agree in regarding this as the chief cause of the disease, giving rise to spermatorrhœa and habits of masturbation.

In this country, we have known young men who had to avoid horseback exercise, on account of its inducing in them the same results.—*Med. and Surg. Reporter*.

Opium vs. Coffee.—M. Richet says, in the *Revue des Deux Mondes*:—

Opium has its antidote; just as we can produce sleep, so, too, can we produce sleeplessness, by the employment of a mind poison, whose effects are diametrically opposite to those of the other. The antidote of opium is coffee. One hundred years ago coffee was almost unknown, but now there is hardly another beverage that is so widely distributed. Every one has it in his power to judge of the effects of coffee. For some persons it is a stimulus necessary for the performance of intellectual work. In others it produces a painful state of insomnia; taken even in weak doses it causes restlessness and anxiety, a sort of feverish activity altogether different from the indolent activity of opium. Under the action of opium the will seems to be lulled to sleep and the imagination runs riot. But, under the influence of coffee, the imagination is hardly stimulated at all, while there does appear to be excitation of the will. Did I not fear being suspected of having a theory to defend, I should say that the faculties of will and consciousness seem to be superexcited; there is, as it were, a constant strain on attention and memory, whereas, in the case of alcohol, hasheesh and opium, there is a relaxing of attention. Hence coffee produces a true intoxication that fatigues one far more than does the somnolent intoxication of opium, but it leads to the same result. In striving to do too much, the mind does less; under stimulation the will is impaired, and the perfect equilibrium of the mental faculties is disturbed as well by excess as by defect of will.

Absorption of Tincture of Iodine by the Skin.—Dr. L. Menager has experimented upon children with a solution of equal parts of tincture of iodine and glycerine, rubbed into the skin, and has arrived at the following conclusions. 1. Iodine in tincture, mixed with glycerine and applied to the external integument, is absorbed. 2. This absorbed iodine is invariably found in the secretion and in the urine. (Dr. M. tests for iodine by adding a little starch to the urine in a test-tube and then dropping a few drops of nitroso nitric acid into it. This gives a blue or violet color, according to the quantity of starch present.) 3. This application may give rise to certain symptoms, usually a variety of mild temporary albuminuria. 4. Dressings containing tincture of iodine may be employed as a means of introducing this medicine into the system when it cannot be taken by the stomach. 5. It must not be forgotten that when this absorption takes place in patients subject to nervoso-vacular erethism, as in certain cases of phthisis, where these dressings are often practised, they may do more harm than good.—*Dublin Med. Press and Circ.*

Thymol as an Antiseptic.—*American Journal of Med. Sciences.*
—Thymol is being used as a substitute for carbolic acid, in Lister's antiseptic dressings, by Prof. Volkmann at his clinic at Halle. The solution is prepared as follows: Thymol 1 part, alcohol 10 parts, glycerine 20 parts and water 1,000 parts. This solution has no corrosive action on the instruments immersed in it, in this respect being superior to carbolic acid, and far superior to salicylic acid.

When sprayed over the skin it produces a lively sense of burning, and a redness; otherwise it has no irritant qualities. Anæsthesia of the skin and desquamation of the epidermis do not follow its use, as they are liable to, under the use of carbolic acid. Nor does the thymol irritate the air passages if it is respired.

Antiseptic gauze, by this method, is made of bleached gauze 1,000 parts, spermaceti 500 parts, resin 50 parts and thymol 16 parts—spermaceti being substituted for the paraffin. The thymol gauze is applied directly to the wound—no protective being necessary because the thymol is non-irritant. Between the 7th and 8th external layers a piece of gutta-percha paper, which has been washed in the thymol solution, is placed, and the whole secured by a roller of the gauze. These dressings seldom need changing oftener than once in six or eight days, thus making a great saving over the carbolic dressings. The thymol gauze should be kept in stock wrapped in parchment paper, and should only be opened at the time it is needed.—*Detroit Lancet.*

Iodoform as a Local Application.—Chloroform is its best solvent when we wish to employ it in solution. It can be made into an ointment with lard or vaseline, and its odor disguised with some of the essential oils. As a powder it may be used alone or diluted with fuller's-earth, magnesia or tannin; the latter in some measure removes its disagreeable odor. Its action can, perhaps, be best shown, by stating its effects in the several affections in which he had used it. Venereal sores: It acts equally well in hard and soft chancres, no matter where located. It should not be applied to a sore when acutely inflamed. Cures are effected in rather less than half the time required for the ordinary local method. There is less risk of buboes, and the constitutional disturbance is not apt to be as great. It acts particularly well in cases where there is a disposition to slough. Buboes, syphilitic ulcerations, chronic ulcers, etc., he has found to speedily heal under its use when other means have entirely failed. It acts well as a parasiticide. In cases of ringworm of the scalp of long duration, speedy improvement ensued from its use in the form of ointment. Chloasma yields readily to it. In sycoosis the results from its application were not encouraging, as it gave rise to undue irritation.—*Cottle, in British Med. Jour.*

New Method of Plugging.—Dr. Weil, of Munich, has employed and advocated the method of first extracting the tooth, filling it with amalgam or gold, and then replacing it. He states that the results are excellent, and the teeth can be freely used. He keeps the tooth out of the socket for one or two hours, as may be necessary, and yet the tooth ultimately is firmly fixed. He finds the method quite applicable to both bicuspid and molars. Since extraction can be performed under anæsthetics, many persons will prefer the new method to the old, provided the subsequent refixing does not involve more than complementary pain, and provided also the method is found as successful in other hands as in those of the inventor's.—*Med. and Surg. Reporter.*

To Utilize Gutta-Percha Scraps.—Scraps of gutta-percha tissue may be made to serve a good purpose by dissolving them in commercial benzole and adding some vermillion or other pigment. When this solution is applied to the necks and stoppers of bottles, a tight-fitting capsule is formed, which is impervious to air, moisture, alcohol and acids, and may be torn off in a moment when desired.—*Druggists Circular.*

The Physiological Action of Aconite.—In an article in the *Practitioner* Dr. G. H. Mackenzie states that the physiological action of aconite on the respiratory system may thus be summarized :—

1. Its effect on the respiration is primary, and due to the direct action of the drug on the sensory fibres of the vagus, and the respiratory centre.
2. It induces a series of symptoms closely resembling those developed after section of the vagi.
3. It causes death partly by asphyxia, and partly by the variety of collapse spoken of by Brown-Sequard as "characterized by a great diminution of breathing, produced by a peculiar influence on the central organs of respiration, the heart continuing to beat with more or less vigor."—*Med. and Surg. Reporter.*

Action of Chloroform on the Bladder.—Dr. Reliquet, in his lately published "Lectures on diseases of the Urinary Passages" (Paris, 1878,) states that the complete action of chloroform on the sensibility of the urethra stops at the neck of the bladder, when the latter is the seat of local irritation; in the female, the action of the anæsthetic on the urethra is complete. As for the bladder, the inhalations, far from diminishing its sensibility, appear, on the contrary, to increase it, when it is the seat of some lesion; but, when healthy, the bladder dilates under its influence.—*Med. and Surg. Reporter.*

Extirpation of Superior Maxilla.—Dr. Mason presented the left superior maxilla, which he had removed by operation from a female aged thirty-four years, a patient in Roosevelt Hospital. Two years ago she suffered from an abscess in the vicinity of one of the molar teeth. In due time there was a spontaneous discharge of pus. Shortly after this a growth made its appearance in the neighborhood, but it did not increase rapidly, or give rise to any special pain, until two months ago. At the time of her admission to the hospital she was very much run down by excessive pain, which was confined to the left side of the face and to the region of the orbit. The vision of one eye was slightly impaired. The tumor filled the whole of the antrum, projecting eternally into the nares and upward upon the orbit, causing the eye to bulge slightly forward, and also involving the outer surface of the alveolar process and the roof of the mouth. The incision was made by Fergusson's method, and the whole of the superior maxilla removed, leaving its periosteum intact. Tumor was examined by Dr. Delasfield, and found to be a spindle-cell sarcoma. He alluded, in connection with this case, to a similar operation which he had performed upon a patient six years ago, with the result of a reproduction of the bone. *Med. Record.*

Malformation of the Skull in Epileptics.—A writer in the *Annales Psychologiques* states that want of symmetry is nearly always present in the skulls of epileptics. When in the base of the skull it is revealed by a similar condition of the bones of the face, and this condition may easily be detected. In the true epileptic, it consists of a projection of one of the halves of the frontal, generally the right. As a rule, it occupies a position over the eye, but may be found more posteriorly, reaching to the frontoparietal suture. This projection may be detected by sight and touch, and other deformities may then be looked for. These are found in the orbit, the malar bones, and the palate. The soft parts may participate in the deformity, the eyebrows and lips being altered in position, or the folds of the skin more marked on one side than the other.—*Med. and Surg. Reporter.*

Case of Hydrophobia Cured by Oxygen.—This case is reported by Drs. Schmidt and Zebeden, from Russia. The first symptoms of rabies appeared seventeen days after the injury. The patient was made to inhale three cubic feet of oxygen, and two hours afterwards he was in a state of perfect calm. Two days afterwards the symptoms of rabies reappeared, and another inhalation of oxygen was administered with the same success. This time the inhalation was continued for forty-five minutes. A slight dyspnoea which persisted after the disappearance of the graver symptoms, was treated for three weeks by the monobromide of camphor.—*Lyon Medical.*

Vegetable Parasites of the Skin.—Dr. Edward Wigglesworth has studied the characteristics of the vegetable parasites of the skin by a series of inoculations upon himself, giving special attention to the question of their identity or non-identity. The following are the results he has obtained: 1. All vegetable parasites of the skin are not inoculable at all times and upon all persons. II. Varying degrees of intensity, or duration of application, are needed for successful inoculation of different parasites upon the same skin; the severer cases requiring more thorough inoculation. III. A healthy skin may resist the action of the less severe but more widely-spread mycoses but, yields to the more thorough inoculation of the more severe and rare forms, showing that the resistant power of the soil furnished is a factor to be regarded. IV. Extension and intension are in inverse ratio to each other. The milder mycoses are the more common, and point to an origin upon skins below par in vigor. V. The various mycoses of the human integument possess each its own distinguishing characteristics, although a transitory stage of growth of one of them may, in rare cases, as in the "ringworm stage" of favus, simulate in appearance one of the forms, temporary or more permanent, of an apparently different species. VI. While botanical and clinical observations are so at variance in reference to the identity or non-identity of the mycoses, this question must be regarded as still undecided.—*Archives of Dermatology.*

Lead-Poisoning by Flour.—Dr. Alford details the particulars of a local outbreak of lead-poisoning, which occurred in one part of the Taunton Rural Sanitary District, but in houses far apart. He analyzed the water, cider, preserved fruits, etc., but without detecting any lead. On careful inquiry, however, he found that the families affected had one thing in common, viz.: they all had their flour from the same mill. An analysis of this flour showed the presence of lead, and an examination of the mill revealed the fact that the holes in the stones had been filled up with lead. The lead was removed, and the disease gradually disappeared. Some of the cases were of a very severe form. It appears, on further inquiry, that it is by no means an uncommon thing for the holes in mill-stones to be filled with lead, a fact which is worth remembering.—*Med. Record.*

Antidote to Carbolic Acid.—On the recommendation of Prof. Baumann, Dr. Sanftleben used sulphuric acid in several cases of poisoning by carbolic acid with the best success, the phenol combining with the acid to form phenyl-sulphuric acid, which is not poisonous. He administered it in a mixture composed of diluted sulphuric acid 10:0. mucilage of gum 200:0, and simple syrup 30:0 grammes, in doses of a tablespoonful every hour.—*Pharm. Ztg. f. Russl.*

Hypodermic Injections of Chloroform.—These injections have been highly recommended by eminent physicians as a substitute for morphine. It is claimed that they are painless, that they relieve pain rapidly and for several hours, and that they are entirely innocuous, being followed by neither local nor general symptoms. Dr. Jochheim, of Darmstadt, however, reports a case in which the injection of only ten drops of chloroform, which is only half what is frequently administered, was followed by severe local disturbances. Five hours after the injection a violent local inflammation set in, and in twenty-four hours a hard, black slough had formed, which was not cast off by suppuration until six weeks afterwards.—*Allg. Med. Cent. Zeit.*

Chloroform Narcosis Cured by Nitrite of Amyl.—An English Journal reports a case of threatened death from chloroform, in which the patient was resuscitated by the inhalation of a few drops of nitrite of amyl. The indication for the use of amyl is furnished by the sudden failure of the pulse.

Another means of treating a threatening narcosis caused by chloroform is recommended by M. Baille, of Belgium. It consists in the introduction of a small piece of ice into the rectum. A moderate degree of pressure suffices to overcome the resistance of the sphincter. The ice melts in the intestine, and immediately excites a deep inspiration, which is followed by the re-establishment of natural respiration and of the cardiac functions.

This treatment might also prove serviceable to excite respiration in the new-born child.—*Med. Record.*

Disadvantage of Salicylic Acid as a Dentifrice.—Dr. Dobrowski reports, in the *All. Med. Central-Zeit.*, an unpleasant odour to the breath after long use of salicylic acid, either in mouth washes, or as a tooth powder. If salicylic acid remains in the mouth, it decomposes in very small quantity the sulpho-cyanide of potash, one of the constituents of the saliva whose function is to arrest decomposition in food debris. It is the odour of decomposition thus permitted which is communicated to the breath.—*The Doctor.*

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ARTICLE I.

The American Dental Association.

The eighteenth annual session of the American Dental Association was held at Grant's Hall, Niagara Falls, commencing August 6th, the President, Dr. F. H. Rehwinkle, of Chillicothe, O., in the chair, and Dr. M. S. Dean, of Chicago, Recording Secretary. The Association was called to order at ten o'clock, and the proceedings opened with prayer by Dr. W. H. Morgan, of Nashville, Tenn.

Following the calling of the roll of qualified delegates by the Treasurer, Dr. W. H. Goddard, of Louisville, Ky., the minutes of the final session of the last annual meeting were read and approved.

Dr. Thomas Fillebrown, of Portland, Me., Chairman of the Committee on Programme, reported the following Order of Business:

Organization of the meeting, 10 A. M.

Calling the roll of qualified members.

Reading of the minutes, and action thereon.

Meeting of the Executive Committee, filling of vacancies therein, examination of credentials, and payment of dues, 8 A. M.

Reports of officers and Special Committees.

The reading and consideration of the stated annual reports from the Standing Committees, together with volunteer papers, upon the same subjects, in their consecutive order.

Report of Executive Committee.

Balloting for the place of next annual meeting.

Election of officers and three members of Executive Committee.

Appointment of Standing Committees.

Instructions to the Permanent Committees.

Unfinished, new, and miscellaneous business.

Adjournment.

Time of session 10 A. M. until 2 P. M., and 7½ P. M. until adjournment.

Dr. Freeman, of Buffalo, moved that instead of an evening session, an afternoon session be held from 4.30 to 8 P. M. Lost.

The report of the Committee was then adopted.

Under the head of "Reports of Officers and Special Committees" the committee on credentials reported progress.

The Secretary read a communication from Dr. J. J. Birge, of San Francisco, tendering his resignation as a member, because of his being so far removed from the Atlantic States.

On motion the resignation was accepted.

The Executive Committee, through Dr. Shepard, of Boston, reported that for absentees, they had substituted Dr. G. V. Black, of Jacksonville, Ill., on the Committee on Appliances, and Dr. C. N. Pierce, of Philadelphia, on that of Nominations.

Dr. G. H. Cushing, of Chicago, moved the adoption of the following resolution offered at the last meeting:

Resolved, That Dentists not resident in the United States who may be present, and whose names may be approved by

the Executive Committee, are hereby invited to seats upon the floor, and to participate in the discussions.

The Corresponding Secretary, Dr. Marshall H. Webb, made the following report :

Your Corresponding Secretary would respectfully report that he has attended to the duties assigned him, notified the gentlemen who were elected honorary members of the Association, viz : John Tomes, M. R. C. S. ; Charles S. Tomes, M. A., M. R. C. S. ; George Van Langadorff, D. D. S. ; E. Magitot, M. D. ; Adolph Petermann, D. D. S. ; Mordant Stevens, M. D., D. D. S., M. R. C. S. ; and Mr. Wedl.

A reply has been received from each of the gentlemen named excepting John Tomes.

In compliance with the resolution passed at the last meeting of the Association, your Corresponding Secretary, in connection with Dr. McQuillen, has seen to the getting up of a certificate of membership, a copy of which is here presented.

MARSHALL H. WEBB,

Cor. Sec.

Dr. Cushing moved the adoption of the following amendment to Article III. Section 4, offered at the last meeting :

All delegates shall be practitioners of dentistry ; they shall receive their appointment only from permanently organized State Dental Societies and Dental Colleges.

On motion action on this amendment was indefinitely postponed.

A further amendment to Section 1 of Article III, "that each local society may send one delegate for every fifteen of its active members," was voted upon and lost.

Dr. R. F. Hunt, of Washington, D. C., presented the following majority report of the Special Committees on Sections, which was not adopted, a minority report prevailing :

To the American Dental Association :

The action of the American Dental Association in adopting the following resolution has been interpreted by the enlarged committee as a desire that the subject should be

more maturely considered, and the results of that consideration laid before the Association in a more exhaustive report and a more detailed and perfected plan :

"Resolved, That the committee be increased to ten members, and that the report presented by the committee of three be recommitted to said committee for amendment or reconsideration, and that they be instructed to print the results of their deliberations, and that a copy be mailed to each member of the Association at least one month before the next annual meeting."

Acting upon this interpretation the committee will endeavor to set forth the advantages and objections attending the introduction of this very material change in the working machinery of the Association. On both these points it will be necessary to compare the probable working and results of the proposed system of permanent sections, with the known and tried ones of the present plan of annual committees. The committee cannot do better in that direction than to quote here the second and third paragraphs of the original report, as follows :

"The principle of division of labor and concentration of effort, so extensively adopted in the successful prosecution of ends in so many business interests, and that have been so happily practicalized in this body, would seem to apply with peculiar force to our investigations and researches, since we have before us a field so wide, and embracing so many branches of science that no one man can hope to master them all, or even a considerable number of them and at the same time pursue the practice of his profession.

"It can, therefore, hardly be doubted that the members of this Association can accomplish more for the advancement of the interests of our profession by persistently pursuing scientific inquiries, as connected therewith, in a single direction or on a limited number of subjects, than by the present system of preparing papers or essays year after year, and each year on different subjects."

This general comparison may be carried more into detail by saying that, by the plan of annual committees, members

are appointed thereon in many instances without having been consulted, and thus placed in charge of subjects not consonant with their tastes or inclinations and with which they are frequently not familiar.

The papers prepared by the committees thus constituted, although of great value in themselves as embodying the views and opinions of prominent gentlemen of our profession, necessarily contain much of repetition and lose much of force and efficiency by reason of the unavoidable want of system in the treatment and presentation of the various subjects, and the equally unavoidable aspect which they bear of being but the expression of individual views and opinions.

It is believed that in the proposed system of permanent sections, if properly organized and operated, will be found a remedy for this and other objections. Each member of the Association will be free to select for himself that channel of study and labor which his acquirements, his present knowledge, his taste and predilections or his desire for special instructions may lead him to prefer. Each section, being permanent in its membership and continuous from year to year, can present to the Association the results of its labors so systematized and well digested as to be most effective, and the talent and ability of those members who will naturally gravitate to each section will, if not immediately, yet in a short time, give to its dictum on the subject under its charge, that type of authority that is now accorded to the writings of Agassiz on Natural History, Leibig on Chemistry, Huxley, Leidy and Marsh on Comparative Anatomy and Physiology, Tyndall on Physics, etc.

While each section is pursuing the investigation of its particular subject in a thorough and exhaustive manner in a scientific point of view, its members will in turn receive the benefits of similar labors of each of the other sections, thus making the results of the special researches of each section and individual enure more effectively to the benefit of the whole Association and the profession at large.

The objections to the adoption of the system of permanent sections would seem to lie, first, in the difficulty always attending the introduction and organization of new machinery; and second, in the doubt that may arise whether the members, after uniting with a section, would work so as to make its labors effective. These objections, however, would derive all their weight and force from a want of disposition on the part of the members, and not from any inherent defect or disadvantage of the system itself. Should it present itself in so favorable an aspect as to lead to its adoption, there would be certainly little difficulty, after its details are determined, in carrying it into practical operation. This would simply require willing, intelligent, and properly directed effort.

The first step would be the formation of the sections, which is accomplished by each member choosing his subject or special field of labor, and enrolling his name in the section having charge of it. The next would be the organization of the sections by the election of a chairman, and if desired, other officers of each section.

Upon this chairman, as its quasi executive officer, would naturally devolve the duty of conducting and supervising the work of the section—a trust which it is necessary in all large or small organizations to repose in some one—and this duty and trust always carries with it a greater or less amount of labor. The method of investigation and preparation of the work of the sections for report to the Association must, from the diversity of subjects and manner of handling them, be left to a great extent to the judgment of each section, although there should be a general similarity of plan for all.

It is here suggested that the chairman of each section divide his subject into as many parts or heads as a proper analysis or dissection will permit, and by correspondence or otherwise obtain the conclusions of each member of his section upon all or any one or more of these parts, and embody these conclusions with his own in the report prepared by

him for the Association. Of course these conclusions should be based on careful investigation and supported by facts, because no proposition or statement has any value in a scientific point of view unless so based and supported; and one great objection in the introduction and adoption of this system, is to bring the diverse views, theories and propositions which are at this time, or may in future, come before our profession, to that test, and thus establish and fortify the true, and eliminate those having no solid foundation.

It would probably be well for this Association to constitute the chairmen of the several sections a committee to mature and adopt some general plan, and, as far as they can the details of the work of the section.

While it would be desirable that all the members of the Association should have the benefit of the discussions elicited in the sections while making up the reports, yet that is impossible. As now, the consideration of the report made would afford the best occasion for profitable discussion and instruction.

It will be readily understood that while the treatment of the past history and former developments of a subject may make the first two or three reports of a section lengthy, yet, when they shall have been disposed of, the current condition of such subject will probably furnish matter for only brief reports, and at that time, therefore, the number of divisions and sections reported in the following resolutions will not be too great, though at present it may seem cumbersome :

Resolved, That the membership of this Association be, and is hereby divided into twelve different sections, each section to be composed of such members as may elect to unite and form that section.

Resolved, That it shall be the duty of each member of this Association to connect himself with some one of these sections, but that he shall be free to follow his own preferences as to the particular channel in which he will labor, and may, if he so desires, be a member of two or more sections.

Resolved, That the members of each section shall at each annual meeting of the Association, immediately after the regular election of officers, elect in turn and in the order named, a chairman and such other officers as they may see fit, the names of the members of each section being read and the same tellers canvassing the ballot. And it shall be the duty of the chairman so elected to see that the labors of his section are conducted in the manner calculated to secure the best results.

Resolved, That each section shall have charge of one of the following divisions of the subjects or branches essential to scientific dentistry, and through its chairman, or such other member as it may select, report upon the same to the Association at each annual meeting, in the order in which they are named :

1. Operative Dentistry or Dental Surgery. 2. Artificial Dentistry. 3. Anatomy and Physiology. 4. Histology and Microscopy. 5. Etiology. 6. Pathology and Therapeutics. 7. Chemistry and Materia Medica. 8. Metallurgy and Chemistry of the Metals. 9. Dental Education. 10. Dental Literature. 11. Dental Nomenclature. 12. Dental Appliances.

Resolved, That after the several sections shall have been fully organized and in working condition, it shall be the duty of each chairman to furnish the latest and best information in the possession of his section upon any point connected with its subject, to any member of another section, who, through the chairman of his own section, may apply to him for such information.

Respectfully submitted,

R. FINLEY HUNT,
W. H. ATKINSON,
H. A. SMITH.
C. W. SPALDING,
HOMER JUDD,
W. H. MORGAN,
J. H. MCQUILLEN,

Committee.

Dr. W. H. Atkinson, of New York, from the committee on Dental Nomenclature and Terminology, presented a report giving a few illustrations, suggestions, etc., for the improvement of technical terms in use in the profession. The committee recommended that the name of section two

be changed from Dental Nomenclature to Nomenclatum, and the correlation of dentistry with science at large.

Discussion being in order, remarks on this subject were made by Dr. John Allen, of New York, who proposed the term "Artificial Dentistry" as a substitute for "Mechanical Dentistry."

The recommendation from the committee on nomenclature was laid on the table, until the report of the committee on sections came up for disposition.

After further remarks from Dr. J. Taft, of Cincinnati, O., the subject of nomenclature was passed.

Dr. Thomas Fillebrown moved that all dentists and physicians, not members of the Association, be invited to seats upon the floor. Carried.

The following proposed amendment to section 4, article III, of the constitution, offered by Dr. D. C. Hauxhurst, of Battle Creek, Mich., a year ago, and laid over, was, by request of Dr. J. H. McQuillen, of Philadelphia, taken up for action :

No Dental College shall be eligible to representation in this Association which does not require two courses of lectures as a condition of graduation.

Dr. Fillebrown moved its adoption.

Dr. Hunt earnestly opposed this motion, and the amendment.

Dr. A. O. Rawls, of Lexington, Ky., moved that action be postponed until the subject of dental education was brought up for consideration.

After remarks by Dr. H. A. Smith, of Cincinnati, Dr. Sheppard and Dr. C. W. Spaulding, of St. Louis, Dr. Klump, of Williamsport, rose to a point of order, claiming that debate was not in order.

The chair decided the point well taken under the rules.

Dr. W. H. Morgan, of Nashville, Tenn., briefly addressed the convention, and the question being taken on the motion of Dr. Rawls, it was lost.

The subject was discussed by Drs. Atkinson, I. J. Weatherby, of Boston, McQuillen, Spalding, J. Foster Flagg, C.

N. Pierce, T. L. Buckingham, Hunt, Morgan, Frank Abbott, G. B. McDonough, Rawls and others.

A majority of these gentlemen expressed themselves as conscientiously opposed to stipulating a stated time for graduation as it was arbitrary. They favored the adoption of a high standard and a course of examination, which should entitle an applicant to the degree, provided he passed a perfect examination and proved that he was equal to the grade of proficiency demanded.

Dr. George H. Cushing, of Chicago, moved that the subject matter be committed to a committee of three. Carried.

The Chair appointed as said committee Drs. Morgan, Fillebrown and Black. This Committee reported on Friday.

At two o'clock the Convention adjourned until evening.

The following is a list of the officers and standing committees :

President.—F. H. Rehwinkle.

First Vice President.—L. D. Shepard.

Second Vice President.—George T. Barker.

Corresponding Secretary.—M. H. Webb.

Recording Secretary.—M. S. Dean.

Treasurer.—W. H. Goddard.

Executive Committee.—W. H. Morgan, Chairman. M. H. Webb, Secretary.

Committee on Appliances.—Thomas Fillebrown, Chairman, A. L. Northrup, T. L. Buckingham.

Committee on Credentials.—L. D. Shepard, Chairman, M. H. Webb, J. N. Crouse.

Committee on Nominations.—Homer Judd, Chairman, W. H. Morgan, G. H. Cushing.

Among the most prominent in the dental profession who were in attendance upon the Association were Dr. W. H. Atkinson, of New York, Prof. T. L. Buckingham, of the Pennsylvania Dental College, Philadelphia, Prof. McQuillen, of the Philadelphia Dental College, Prof. Darby, of the Dental Department of the University of Pennsylvania, Prof. J. Taft, of the Ohio Dental College, Cincinnati, Prof. J. J.)

Weatherbee, of the Boston Dental College, Prof. L. D. Shepard, of the Dental Department of Harvard University, Prof. C. W. Spalding, of the Missouri Dental College, Dr. R. Finley Hunt, Washington, D. C., Prof. Frank Abbott, New York College of Dentistry and Prof. F. J. S. Gorgas, of the Baltimore College of Dental Surgery.

An elaborate display of dental appliances and laboratory apparatus was made by the Buffalo Dental Manufacturing Company in charge of Dr. T. G. Lewis; S. S. White of Philadelphia, in addition to instruments, exhibited a full line of operating chairs and material; Johnston Brothers of New York had also a fine display of goods of like character, the principal articles being the Wilkerson Dental Chair and a Dental Engine. R. S. Williams of New York exhibited a variety of gold foil, etc. Dr. Bonnell, of Philadelphia, also displayed a Dental Engine and Chair.

TUESDAY.—EVENING SESSION.

The meeting of the American Dental Association was continued at eight o'clock, Tuesday evening, President Rehwinkel in the chair.

On motion the rules were suspended for the transaction of miscellaneous business.

REPORT OF THE TREASURER.—

Balance on hand 1877,	-	-	-	\$288 64
* Cash received for dues,	-	-	-	770 00
				<hr/>
				\$1,058 64
Disbursements,	-	-	-	\$899 95
				<hr/>
Balance on hand,	-	-	-	\$158 69

On motion the chair was instructed to appoint two members to fill vacancies on the committee for prize essays. Drs. Pierce and Morgan were accordingly named.

Dr. Shepard presented the following minority report from the committee on sections:

MINORITY REPORT.—The undersigned members of the Committee on Sections, did not sign the report with the majority, for various reasons:

They were and are in doubt as to the wisdom of dividing the Association into sections, but as the opinion of the members in favor seems to predominate, they would recommend that the experiment be tried. They would also recommend that at first the sections should be few in number, and then sub-divided as may seem desirable. As a resolution is of no effect in opposition to the Constitution, they beg now to present, without further argument, a minority report in the following draft of amendments to the Constitution :

ARTICLE III.—*Sec. 3.* Insert the words “and membership of the sections,” between the words “to office,” at the end of the sixth line, and before the words “none being eligible,” at the commencement of the seventh line.

ARTICLE IV.—*Sec. 6.* Strike out the sentence “they shall also report to the Association upon any and all appliances which may be placed in their hands,” near the bottom of the seventh page of the printed Constitution.

ARTICLE V.—*Sec. 6.* Page 8. Under head of “third division” strike out the words “names for standing Committees for the ensuing year and” between the words “they shall report,” and “the names of places.”

ARTICLE VI.—Strike out all five Sections of Article VI, and insert a new article as follows:

Sec. 1. To prepare, arrange and expedite business, this Association shall be divided into six sections as follows:

1. Artificial Dentistry, Metallurgy and Chemistry.
2. Dental Education.
3. Dental Literature and Nomenclature.
4. Operative Dentistry.
5. Anatomy, Physiology, Histology, Microscopy and Etiology.
6. Pathology, Therapeutics and Materia Medica.

Sec. 2. It shall be the duty of each permanent member to inform the Recording Secretary, before the close of the morning session of the third day of the annual meeting, which of the six sections he elects to join for the ensuing year. He shall be free to follow his own preferences as to the particular channel in which he will labor, but can be a member of but one section during the same year.

Sec. 3. It shall be the duty of the Recording Secretary immediately after the close of the above morning session of the third day, to make out lists of the names thus furnished of each section, as a basis for the election of officers of said sections.

Sec. 4. The Association shall, by vote, assign some time after the regular election of officers of the Association, for the meeting of the several sections for organization.

Sec. 5. When the time for the organization of the sections has arrived, it shall be the duty of the Recording Secretary to furnish some one member of each section with the list of members of his respective section, which member shall thereupon call the members to order, and read the list of names. The members shall then elect by ballot, a chairman and such other officers as they may see fit.

Sec. 6. The chairman shall preside at all the meetings of his section. Shall exercise general supervision over the business, and shall see that the labors of his section are conducted in the manner calculated to secure the best results. The chairman, or such other member or members as the section shall select, shall prepare and read at the annual meeting of the Association next ensuing, a paper or papers on the advances and discoveries of the past year in the branches included in the section. The reading of such papers shall not together occupy more than forty minutes.

Sec. 7. The several sections shall meet at 10 A. M. on the morning of the first day of the annual meeting of the Association.

Sec. 8. For the information of all members, a list of the members of each section shall be published in the transactions of each year.

ARTICLE VIII.—Under “order of business” insert between Nos. 1 and 2 the words 2 meetings of the sections at 10 A. M. Change present No. 2 to 3, and have it read “Organization of the Association at 11 A. M. Change No. 3 to 4. Change No. 4 to 5, and strike out the words “standing

committees," and insert the word "sections." Change Nos. 6, 7, and 8 to 7, 8, and 9. Strike out all of No. 9.

Respectfully submitted,

L. D. SHEPARD.

J. N. CROUSE.

When he had concluded reading the report Dr. Fillebrown moved that it be accepted, and to lay on the table the majority report. Carried.

DENTAL PHYSIOLOGY.—Dr. Dean read his report on dental physiology, which, while it did not present any new developments in relation to the subject, gave a sufficiency of matter for discussion and elaboration. It first dealt with the rudimentary germs of teeth and gave the conclusions of certain investigators who have sought for the presence of those germs in foetal substances. He took exception to the claims of Goodsir, on the ground that they need greater verification, or must be abandoned altogether. The next point was the consideration of the third and fourth dentations, and the idea of reproenacy of this kind in old age was scouted by the author. While making mention also of the tendency of scientific men to be led in to discrepancies regarding the teeth. With reference to the opinion of Dr. Magitot, that the crown of the tooth is governed by the enamel organ and not the dental papilla as is generally supposed. The belief of Dr. Dean had been strengthened that the enamel organ is the most passive structure and is formed by the dental papilla. This question was elaborated to considerable extent and in a manner highly interesting to the members of the Association.

When Dr. Dean had concluded, his paper being open for discussion, Dr. Atkinson took the floor and said the able and most excellent paper presented, properly belonged to histology. He then made a very scientific and instructive address upon the subject brought up. He gave notice that it was his intention to place before the convention before adjournment certain drawings, etc., which would demonstrate conclusively to the eyes and ears of the members what it is that gives form and direction to the teeth.

Dr. J. H. M'Quillen next read a paper on Physiology, in which he gave an account of the restoration of certain functions or voluntary action of which a pigeon had been deprived by the removal of four-fifths of the upper portion of the cerebrum, while another had died from the effects produced by a removal of the cerebellum.

We present the following interesting abstract from this paper:

"The usual phenomena attendant upon the operation followed, in profound stupor, the bird standing motionless on the table, with eyes closed, the head sunk between the shoulders and the feathers ruffled. When pushed, it opened its eyes and moved the body, and when thrown into the air it flew a few feet and then, on alighting, relapsed into somnolency with an evident obliviousness to surrounding objects until again aroused by handling. By the first of March, 1878, about twenty-three days after the operation, I was surprised at the complete recovery of the voluntary movements of walking and flying, the general manifestation of intelligence and the fact of feeding itself and drinking as usual. I asked then and I repeat now the same question: how are we to account for the restoration of these functions? Is it due to the fact that the small amount of cerebrum left after the operation assumed the functions of the entire organ, or has there been a regeneration of the part removed? There is but one other case on record that I have met with, where there has been a recovery of voluntary action on the part of a pigeon from which the cerebral hemispheres had been removed; and I was not aware of that fact until the experience with my pigeon induced me to make a careful examination of the literature of the subject. It must be remembered I only cut out the upper four-fifths of the cerebrum. In doing this, however, the superficial gray matter of the hemispheres, reorganized generally as the structure physiologically concerned in the exercise of the faculties of attention, perception, memory and will, was removed."

When he had concluded reading his paper, Dr. McQuillen said that six months after the operation the pigeon

which survived the vivi section was subsequently put to death under chloroform and a *post mortem* examination made. On removing the scalp a fibrous structure was found analogous to the pericranium and on opening this a small amount of serous fluid escaped. When the cranial cavity was exposed he found a large amount of a white substance which he inferred was the regenerative of the cerebrum removed. He placed a section of it under the microscope and discovered that it held ley-polar cellars characteristic of nervous structure. There were those who opposed vivisection, saying "we have learned all we can, don't torture animals any more. Dr. McQuillen thought his experience had taught him that there was yet much to learn in order that dentists as the alleviator's of human suffering might appreciate what was expected of them and be stimulated to govern themselves accordingly.

We can have no better evidence, said the speaker, of the necessity, of experimental investigation in the nervous system, than was presented by the statement of Prof. Brown-Sicord, the distinguished scientist, who has succeeded to the chair held by Claude Bernard in Paris, that most of the conclusions of physiologists and pathologists, in this direction, are founded in error. As he has said, the superstructure is not built upon the rock but on the sand, and that it is tumbling about our ears. When Dr. McQuillen had concluded, he was greeted with a storm of applause.

Association then adjourned until Wednesday morning.

WEDNESDAY.—MORNING SESSION.

The second morning session of the annual meeting of the Association was opened at ten o'clock in the usual form, Dr. F. H. Rehwinkle presiding.

The report of the Committee on Histology and Microscopy was called for, and the chairman, Dr. G. V. Black, read a very interesting paper on the "Odonto-blasts," the leading features of which were illustrated with and made doubly interesting by microscopical diagrams and blackboard drawings.

Discussions being in order, Dr. Spalding took occasion to highly compliment the paper of Dr. Black. No further remarks being offered by members, Dr. G. F. Waters, of Boston, from the same committee, was called upon to present the next paper. He addressed the convention *ex-tempore* upon "Fungi in the Mouth," giving the results of his investigations with reference to the subject he had chosen. His remarks were accompanied with blackboard illustrations of what he had found in the way of fungus growth upon the surface of a tooth.

Dr. Waters was followed by Dr. C. N. Pierce, who read a special paper upon the mechanical genesis of tooth form, showing that force employed by the lower jaw has had its influence in modifying tooth forms.

At the conclusion of his paper, Dr. Pierce presented the general report of the Committee on Histology and Microscopy, which embraces the important announcement that W. R. Gowans, of London, England, had perfected an instrument for the counting of blood corpuscles, whereby he finds that the disproportion of white and red corpuscles is greater than was supposed. The use of iron, he had also found, greatly increases the number of red corpuscles, even to an enormous extent, without improving the health. This augmentation of the red globules was useless without a corresponding amount of hemi-globine. The report concluded with a reference to the importance and need of dentists receiving more systematic and thorough training outside of their manipulative work. It was the knowledge which would fit them to deal with those stubborn anæmic cases which are so productive of *Neuritis*.

Dr. W. H. Atkinson next read a valuable scientific essay, written by Dr. C. F. W. Bødecker, D. D. S., of New York, a non-member of the Association, the subject of which was the preparation and treatment of specimens of the teeth and gums for the microscope. It showed considerable research upon the part of the author and brought

forward a number of new views upon heretofore disputed questions.

Prof. T. L. Buckingham discussed the formation of dentine. The foundation of all organized tissue, he said, was the cell, from which comes another cell similar to the first, the same as an animal from an animal, etc. In other words it was a system of reproduction, the cells multiplying very rapidly, in some instances a cell growing in two or three minutes. In time the germinal matter becomes hardened and forms material, while the cells it has produced go on producing. An aggregation of cells will sometimes produce a dissimilar cell. In the tooth the germinal matter is pushed in or down and the material or dentine is left behind.

Dr. Atkinson followed Prof. Buckingham, and said that those who were depending upon the views of authors whose books and writings are ten years old, were wasting their time. Cells, he said, are vegetable products and there is no such thing as a cell in the human body except so far as they are of vegetated growth.

At the conclusion of the doctor's remarks, he moved that an afternoon session be held from four until six o'clock, to expedite business.

Dr. Spaulding moved as an amendment that the extra session be held Thursday afternoon. Carried.

The convention then adjourned until evening.

[TO BE CONTINUED.]

ARTICLE II.

Relations of the Dental Pulp to the other Tooth Tissues.

BY L. O. INGERSOLL, KEOKUK, IOWA.

Any attempt to pass judgment on the relative value of things essential to life or existence is as futile as the decision of the question in the school-boy lyceum, "Which is

most essential to the well-being of man—air or water?" To decide the question on its merits, in favor of either side, is to nullify unanswerable arguments on the other side.

If we assume that the relation of the tissues of the teeth is as absolute as the component elements of air or water; if the tooth pulp is, at all ages of the individual and in all its vital conditions, a *sine qua non* of tooth structure, as hydrogen is of water, there is no debatable ground on which to plant a doubt. But, on the other hand, if it can be shown that it is not absolute and unchanging in its relations, but variable with age and its own vital conditions, we may pertinently ask, What are its changed conditions and its changed relations to the other tooth tissues, and how should the facts evolved modify our practice?

Dentists everywhere have encountered the popular opinion that when the nerve or pulp of a tooth dies the remaining tooth substance is soon lost. How generally this popular opinion has domiciliated itself in the minds of the dental profession is told in the universal interest which the subject of pulp preservation has elicited during the last twenty-five years. It was also made quite evident at the last meeting of the American Dental Association, when the writer of this paper broached the subject now offered for your consideration. We often find ourselves holding opinions of which we can give little or no account as to how we became possessed of them, except that such are the common belief. A hundred men will walk in the same devious path through the snow, without being able to give any reason for their course farther than that found in the fact that they are following the tracks of the first man that passed along that way after snow fall. Opinions, notions and tissues of thought are entailed upon us like many of our physical idiosyncrasies. We believe and adopt them because our seniors believed and adopted them. In this era of progress and evolution, a decade of years should not pass without a retrospect of our thoughts and opinions, to determine whether they are founded in fact or fancy. The learned

among the Greeks handed down to their posterity fables as well as facts. In our day we have to deal with ancestral foibles rather than fables.

In undertaking to solve the problem of the functional value of the pulp at different periods in life, and in its varying vital and pathological conditions, I desire first to call your attention to a few accepted facts.

The function of the pulp in developing the tooth is unquestioned. But what does development mean? It means something more than presenting the dental organs to view in the mouth. In this sense an ear of corn with well-expanded kernels is fully developed, while yet the husks are green. But the corn is yet in the milk; and even after the glazing of the kernel with its yellow enamel, there is a hardening process going on within to bring it to maturity. Teeth when they cut the gum are yet in the "milk." They must gain in density by a ripening process, not so much chemical as functional. When the teeth first appear, the soft tissue bears a much larger proportion to the hard tissue than later in life. There is a period when the developing dental structure in all its form and substance is *wholly* soft or animal tissue. But from the moment an atom or a molecule of calcifying matter becomes fixed in the periphery of the pulpy mass, this new element is an entity claiming space. Space previously occupied by soft tissue is relinquished to the hard tissue. Though it is quite possible that by proliferation of cells, the pulp for a while maintains its undiminished size, the limit of space renders it mathematically certain that at length the soft tissue must diminish in exact proportion as the hard tissue increases.

This supremacy of the hard tissue once gained, every month and every year lessens the size of the pulp by as much as the hard tissue has gained. *Mark well this tendency to obliteration of the pulp.* It is not a recession or retrogression under pathological influences, but under physiological law. When, therefore, you say that the dentine tubes are being filled up, or that the tube fibrils are being

calcified, you are saying this—that the pulp is diminishing its area—that it is diminishing its territorial occupancy—that in the deserted territory the pulp has ceased its functions—that this is the process of pulp extinction. Every progressive step toward calcification of dentine is just so far a measure of the extinction of pulp substance and pulp function.

We all have observed that the pulp in the tooth of a youth is much larger than in the tooth of an adult. In harmony with this is the histological fact that the dentine tubes are much larger in early life than in adult life; also that other fact which has come to the observation of histologists, that odontoblast cells decrease in size and in number with the age of the tooth.

What is this steady decrease with advancing life, of the size of the dentine tubes, but a steady diminishing of the pulp and pulp influence? What is this increase of the mineral portion but a decrease of the animal and vital portion? What is this process of calcification of dentine fibrils, this encroachment of the walls of the pulp chamber upon the pulp itself, but progress towards pulp extinction? What is this process of mineralization of the teeth at the expense of the animal portion but an indication that the economy of nature is being so fully met *by mineralization* as to need less and less the functional power and nutrition of the pulp?

We have an example of more complete mineralization and annihilation of function in the enamel. It was once as wholly animal in its tissue, and as dependent upon vital functions, as the dentine. But by a process of more rapid development than dentine it passes almost wholly over from the organic kingdom to the mineral kingdom, and becomes in like degree independent of its early organic life. We thus see that the teeth occupy middle ground between the animal and the mineral kingdoms—neither belonging wholly to the one nor wholly to the other—being in their early organic nature wholly under the control of the animal functions, and in their later and more perfected state subject

in greater part, to the laws of the mineral kingdom. This is an important view of the subject, as shedding some light on the relative importance of the pulp at different periods of development of the dental structure. With the change of substance comes the changed relation of the animal to the mineral portion of teeth.

The old physiologists numbered the teeth among the bones of the body. But when their peculiar structure came to be studied, it was found that neither physiologically nor pathologically could they be called bones. Comparisons cannot be justly instituted between them and bone, or any other internal structure. Teeth can more properly be classed with the dermal appendages. They are dermal *out-growths* and not *in* growths, and, like all out-growths, arrive at a measure of independence of that vitality so essential to all internal structures.

In the animal kingdom teeth are allied to horns, scales of fishes, the hard covering of some insects, and to all crustacea; and in their relation to vitality should be compared with these rather than with bones invested with flesh.

For a single illustration take the horns of a deer. The deer's horn has both an inner and an outer pulp. What is known as the "velvet" is the outer pulp. This is highly vascular and wonderfully active in its formative function. Its vessels communicate with the inner pulp through the hardening tissue of the horn as the nerve fibrils of teeth ramify the dentine. As the soft horn becomes mineralized, the canals, through which the outer and inner pulps communicate, are gradually filled up, till at length the outer pulp is cut off from its connection with the inner pulp, and dies. Then by the dictate of some animal instinct its bloody substance is rubbed off. Thus the outer portion of the horn is left without vital support and nutrition.

Tomes, in his Dental Anatomy, speaks of classes of teeth "in which the whole pulp is converted into solid material and no pulp cavity remains." [p. 79.] Then on the following page says: "The pulp of a sperm whale *becomes*

obliterated by a development of secondary dentine." In speaking of the tusk of the elephant, which is probably as nearly identical with human dentine as any animal formation, he says [p. 323:] "The last remains of the pulp are converted into dentine in which a few vascular canals persist; these, of course, occupy the centre of the tusk, and are small in amount."

Of the teeth of rodentia, he says [p. 337:] "The last remains of the pulps are converted into secondary or osteodentine, which thus forms the central axis of the incisors or molars, as the case may be. In this tissue vascular tracts sometimes exist, but altogether small in amount; the formation of true dentine going on till the pulp at that particular point is almost obliterated." On page 339 he says of the same: "Near to the surface actually in wear they [*i. e.*, the dentinal tubes] become cut off from the pulp cavity, by the conversion of what remains of the pulp into a laminated granular mass, so that the dentine exposed on the surface of a rodent's tooth must be devoid of sensitiveness, and the contents of the dentinal tubes must have presumably undergone some change; but what the nature of the change in the contents of dentinal tubes which have ceased to be in continuity with a vascular living may be, there are, so far as I know, no observations to indicate."

In his description of the teeth of the parrot-fish we read [p. 213:] "When calcification has proceeded so far as to obliterate their central pulp, cavities, etc."

The above facts lead us to the conclusion that the developmental process in the formation of dentine is continuous and towards perfectibility, and that perfectibility of dentine means a calcification of dentinal fibrils so complete as to wholly exclude vitality from the area so calcified. Notice, too, this completeness of calcification is not the result of formative action excited at indefinite intervals by irritation from without, or by any external influence, but is *inherent in the nature of the function*, and is a continual progression according to physiological law.

In the mouths of some persons this perfectibility of structure is greatly retarded or wholly prevented by diseased conditions, general or local. Operations on such teeth are always attended with pain, even after middle life of the patient. But the experience, even of a limited practice, brings convincing evidence of teeth in the mouths of persons healthful organization that are entirely free from sensation throughout a large portion of their crowns, rendered so by a completed calcification. Such teeth are found in the mouths of many persons in middle life and on down to old age. We should be familiar with a larger number of cases of this kind, except that persons with such teeth seldom need the services of a dentist. By every test for vitality, such dentine, receiving no nutrient support from the pulp, is really dead. Yet every dentist reckons such teeth in the soundest possible condition, least disposed to decay. For this is the most complete tooth structure—complete in proportion to the obliteration of the pulp fibrils, thereby rendering such portion of the hard tissue independent of pulp influence.

[TO BE CONTINUED.]

ARTICLE III.

Extracts from a Prize Essay on the "Conservative Treatment of the Pulp."

BY WALTER H. FUNDENBERG, PITTSBURG, PA.

Presented to the Faculty of the Philadelphia Dental College, for the Degree of D. D. S.

* * * * * Every tissue of the human body is liable to pathological changes, and it is therefore not to be supposed that the highly organized nervous expansion which we term "the pulp" is exempt from the operation of this law. Our every day practice shows us that this sub-

stance is liable to varying degrees of disease, from simple irritation consequent upon exposure and other causes, to the severest forms of inflammation—these degrees producing according to their intensity, simple hyperæmia—chronic inflammation with resulting textural changes, and intense inflammation, suppuration and death.

The various forms of pulp disease are produced either by external or internal causes. The external are caused by chemical or mechanical influences, the internal by abnormal growths or pulp nodules, and by other obscure changes not yet fully recognized by pathologists. The greater number arise from the external causes, but it cannot be doubted that the internal causes of pulp disease operate much more frequently than is generally supposed. The diagnosis of these cases arising from internal causes is often difficult, but is generally arrived at with a reasonable degree of certainty by a careful review of the symptoms. For instance, take a case in which the patient presents himself with a “tooth-ache”—you make a thorough examination, find the teeth free from apparent disease, with no indication of periosteal trouble—the pain not increased by extremes of heat or cold, and no evidence of a reflex neuralgia. In such a case you will be justified in suspecting osseous deposits in the pulp cavity or at the termination of the root of the tooth, which by pressure establishes either a simple irritation in the tooth or a more extensive neuralgia along the branches of the fifth pair.

In conditions so obscure and so removed from the influence of topical remedies, we will often be unable to afford permanent relief, without the destruction of the pulp.

In the consideration of the affections of the pulp arising from external causes, we find three factors—first those arising from attrition, second, those from mechanical violence, and lastly those from chemical causes. In those caused by attrition we find nature ever conservative in her efforts, throwing out a deposit of secondary dentine as a barrier, shielding the sensitive pulp from the contact of external

irritants. Often as the process of attrition goes on, the pulp cavity becomes nearly obliterated without the production of any pain, but in other cases this process is accompanied with high irritation and sometimes suppuration. Fortunately this process occurs mostly in persons of advanced age. The oral teeth are generally the seat of this attrition, usually the six superior, caused by the inferior closing upon their cutting surfaces.

We come lastly to those exposures of the pulp, caused by chemical action. Here we find the tooth structure rapidly breaking down and the pulp doomed to certain destruction if we as conservative practitioners do not step forward and lend a helping hand to nature, and assist her in forming those barriers of defence and protection which she has been endeavoring herself to erect. *Sequare Naturam*, was the golden maxim of the ancients,—follow nature; let her methods of repair and protection serve as hints to yours. In thus endeavouring to define these barriers against the destructive influences that destroy the pulps, we find that many different methods and materials have been used by different practitioners. In looking over the long list, we find that there is no remedy that will not fail occasionally in this department of medicine as in all others. The principal materials used have been the Oxy-chloride of Zinc, Gutta-percha or Hill's Stopping, Metal Caps, Phosphate of Lime, Court Plaster, Isinglass, Gold-beaters Skin, and Egg Membrane; of these, I place the Oxy-chloride of Zinc at the head of the list, as I discard the rest as of little or no value in direct exposure. But in some cases in which it is claimed that this material fails, some of the above may be used, especially in those in which the pulp is *almost* or *very slightly* exposed. Upon deciding to operate, we must carefully remove all irritants, as the pulp will not tolerate foreign substances; we next control the circulation and reduce the inflammation if any exist. This is very important as all exposed pulps die by what may be termed strangulation; if we can succeed in this, we start with a solid

foundation. It is claimed by some, that it is impossible to diagnose "inflammation of the pulp." It must be admitted that in some cases it is very difficult; cases that are congested and inflamed, whether recent or of long standing will bleed *freely* if pricked with an instrument. This is a valuable diagnostic mark; in many cases pain due to fullness of the parts, and consequent pressure on the nerve fibers, will assist the diagnosis. In large exposures this symptom may not exist, because there is more room for expansion. With a little careful investigation, errors of diagnosis as to the presence or absence of inflammation or congestion, need not occur.

In cases highly inflamed and congested, oil of cloves, creasote and aconite are useful. The aconite decreases the circulation in the part by constricting the capillary vessels, acting doubtless on the vaso-motor nerves. It is necessary however to be careful in its use, as the vitality of the pulp may be so reduced that its death may result. I find a very useful formula, as used by a prominent practitioner, to be Creasote, gtt. V.—Tr. Iodine and Aconite, aa, 3 ss, M. This acts with very satisfactory results. In many cases the oil of cloves alone answers admirably, and is preferable because its taste and odor are more pleasant. There are cases however in which we can bring about a condition suitable for capping by the use of creasote or carbolic acid; these remedies act not only specifically, but also by disinfecting the vitiated secretions.

Having now succeeded in preparing the pulp for the reception of a barrier, we now proceed to erect it. What material shall we use? In the list of materials, I have mentioned metal caps, which are principally lead and gold. These are made from a thin sheet of metal of such size and shape as to cover the pulp completely, without coming into contact with it, to accomplish which it is necessary to make the side next to the pulp concave, and also to fit the edges in a groove made in the dentine, thus retaining it *in situ*; of these two metals, lead is certainly more suitable, being

more readily adapted, and also less of a conductor. Some operators have arched the gold in-filling from each side towards the center; there is no advantage in this and it is besides a difficult operation. But the space that is left between the cap and pulp by these operations constitutes a formidable objection to their use. It is claimed that an osseous deposit will be thrown out here, but I think it much more probable that a fluid exudation will ensue, the result of which will be pressure, pain, inflammation and gangrene. To prevent this occurrence, it has been suggested to place in this space, collodion or gutta-percha dissolved in chloroform. This may be done if the exposure be very slight, *but only in such cases*. The phosphate of lime mixed with lacto-phosphate has its advocates; this is made into a thick paste, placed in direct contact with the pulp, the cavity sealed and allowed to remain for a time. It is claimed that when this is cut away properly, a perfect capping over the pulp will be left. Egg-membrane, gold-beaters skin, Isinglass, and gutta-percha are all placed over the exposure and the filling inserted. Of the above, none equal the oxy-chloride of zinc; it is readily applied and appears to be more acceptable to the pulp, not acting so much as a foreign body, if applied correctly, although it can be used in such a manner as to be the most objectionable, causing intense suffering to the patient; but care being taken, we find it will cause sufficient stimulation to excite the pulp to healthy action. Dr. Garrettsen, in his valuable work on "Oral Surgery," says in regard to the use of this material for capping, "That oxy-chloride of zinc is a most admirable agent in such direction, employed with a judicious care, is certainly not to be denied." No substance introduced into a tooth seems to exert greater influence in the excitation of that action which produces secondary dentine, than does it; but injudiciously employed, no compound more quickly provokes antagonistic inflammatory action.

The manner of applying this material is this: After being satisfied that the pulp is in as good condition as it is

possible to bring it, and that the cavity is perfectly dry, a small portion of the oxide is mixed with creasote on some smooth surface as a piece of glass, to such a consistency that it can be held on the point of an instrument, and placed in direct contact with and over the pulp. The paste thus formed will remain in a soft condition, and lying in close opposition to the pulp, will prevent any effusions taking place, as invariably happens when the covering is arched so as to leave a cavity beneath. It is very often advisable to allow a considerable portion of this material to extend over the cavity, and at the same time of such a thickness as will prevent the next application which is to be a mixture of the oxide and chloride, from giving undue pain. If there is found to be a surplus of creasote in the cavity, by the use of a piece of spunk or any absorbent, we can remove it entirely if desired.

Having placed the oxide and creasote in the cavity, our next step is to remove any that may have come in contact with the edges. If we do not take this precaution, we will find as this material never hardens that we will have an imperfect filling. After this we proceed to insert the oxide and chloride. In mixing this, it should be performed as rapidly as possible, for if the material is once allowed to commence crystallizing we lose one of its important properties, as it never becomes as hard again when once disturbed. Many operators ruin their material in this way. I am sorry to say I have seen a number mix it as though they did not know its properties, and am pained to believe there are men in the profession who use materials simply because others have done so, without knowing their properties or endeavoring to discover them. Again we must not allow too much chloride to be mixed with the oxide as we will have intense pain and sometimes extended irritation. I am satisfied many pulps are destroyed in this manner. Many operators object to this material on this account. I think if they will use *Agate Cement*, a material which has lately been brought before the profession, they will find the pain

can be overcome. I would here say in making all applications, of whatever nature they may be to the pulp, we should endeavor to have them as near the temperature of the tooth as is possible. This may appear to many not to be of much importance, but any person knowing the delicate structure he is dealing with, can at once see the value of such a precaution. Having inserted the material, we then allow it to harden. Guided somewhat by our next procedure, if we propose to wait for secondary dentine, we allow the material to be kept perfectly dry from twenty to forty minutes. If we are to insert a filling over it at the same sitting, we must use our judgment, filling as soon as we feel it will bear a filling properly. I will here give you a record kept by my father, Dr. W. F. Fundenberg, of Pittsburg, of pulps treated in this manner, for the last five years; it being more complete and extensive than my own.

The whole number of pulps capped in that time in the permanent teeth was 306, of these 235 were capped and permanently filled at first sitting; of this great number we are aware of but 11 known failures; of the other 71 that were filled temporarily and afterwards filled permanently at another sitting, we find the small number of 3 failures, or a total of 14 failures in the 306 pulps capped. In the temporary teeth no complete record has been kept, but we find the failures more numerous.

These figures to many will seem enormous, especially those practicing in districts where they claim this can not be accomplished. I do not contend that these 14 are all of that 306 that have failed; it is quite probable others have failed that we are not aware of. I do not believe two-thirds have failed as some practitioners claim to be the result of practice of this kind; and I doubt if one eighth have succumbed.

You will all ask, what do you call a failure? I answer where a pulp has once been capped and it is afterwards necessary to *remove the filling or tooth*. We find from good authority that some parts of this country are more suitable

than others for capping, the South and West as a whole being very favorable, the latter in particular. In the East we find a difference of opinion, although this city, Philadelphia, is numbered as unfavorable; upon this point I am unable to speak, not having treated it as thoroughly as I would have liked, as many of the patients attending clinics at the college are of that class whom it is difficult to keep before you.

I think I have clearly shown in the foregoing, that exposed pulps of teeth can be saved, if the operator of the present and future will only lean towards conservative treatment in the proper manner. I am pleased to see the great number who are conservative, and still adhere to that practice. If we fail, we can only wait until science reveals something more successful. I believe we are justified in many cases in giving the patient the benefit of the doubt, and if not successful we can feel that we made an effort to *save*, not *destroy*, that which was placed there for a purpose, by the wisdom of the Creator.

ARTICLE IV.

The Metric System in a Nut Shell.

BY EDWARD WIGGLESWORTH, M. D.

"WASHINGTON, May 3.—Surgeon-General Woodworth, of the U. S. Marine Hosp. Service, has issued a circular, with the approval of Secretary Sherman, requiring medical officers of the Marine Hosp. Service to make use hereafter for all official, medical, and pharmaceutical purposes, of the Metric System of Weights and Measures, which has already, under the act of July 28, 1866, been adopted by this service for the purveying of medical supplies."—*Boston Daily Advertiser*, May, 3, 1878.

The Metric System is already *legalized* in both America and England. The only question now is, which of the two, the most progressive or the most conservative nation on earth, shall be the first to definitely and finally adopt it as an *exclusive* system? [N. B.—England was 400 years behind the continent in adopting our present arithmetic.] Russia has already taken the preliminary steps towards its final adoption. The rest of the civilized world long since made the system obligatory, in whole or part, except that, in Sweden alone, its obligatory use is to date from a period in the future, 1889.

Now, what is this Metric System? Metric is from the Greek word "metron," a measure, spelled with Epsilon, e short, and, therefore, pronounced met-ric.

The Meter [measure] is, practically, a fixed quantity, namely, the ten millionth part of the earth's quadrant from the Equator to the North Pole. With the Meter everything can be *measured*, for it is itself the unit of length; a cube, the edge of which is the tenth of a meter, is the unit of capacity [Liter,] and the weight of a cube of rain water, at its extreme contraction, the edge of which cube is a hundredth of a Meter, is the unit of weight [Gram.]

It is the Gram alone which concerns physicians, for, in the Metric System, *everything is best prescribed and dispensed by weight alone*; numbers upon a prescription paper being regarded by the pharmacist as representing Grams, unless the contrary is expressly stated. The fractions are always decimal.

The table is easily learned. It consists of six words, as prefixes, whether we deal with Grams, Liters, or Meters. These are: Deci for tenth, Centi for hundredth, Milli for thousandth; Dekka for ten, Hekto for hundred, Kilo for thousand. Having these few words, the terms of Troy, Avoirdupois, and Apothecaries' weight, and of liquid measure, may be relegated to the limbo of pounds sterling, shillings, four-pence-ha'pennies, and farthings. As we say dime, cent, mill, so we say decigram, centigram, milligram.

These prefixes are Latin, and *diminish* the value. Dekka, hekto, and kilo are Greek, and *increase* the value. The mnemonic is G I L D, *i. e.*, Greek Increases, Latin Decreases. Dekka occurs in the English word decade, hekto in hectacomb, kilo in chiliad.

"Being accustomed to the words mill, cent, and dime, we shall find the words 'milligram,' 'centigram,' and 'decigram,' quite as simple and easy to pronounce as our words 'penny-weight-troy,' 'hunderweight-averdupois,' 'scruple-apothecaries,' etc., notwithstanding the assertion to the contrary of those who grieve to give up the short and sharp Anglo-Saxon words used in our present *familiar* old table of weights and measures."

Practically, moreover, for physicians, the whole system is reduced to grams and centigrams, just as, in money, to dollars and cents. On the right side of the prescription paper draw a perpendicular line from top to bottom. This decimal *line* takes the place of all the decimal *points*, and obviates the possibility of mistakes. This is the way dollars and cents are separated on business papers. Additional security is gained by writing the decimal fraction [centigrams] of half size and raised above the line [of grams,] since it represents a numerator of the denominator, 100 is omitted. To make assurance doubly sure, "Grams" may be written over the integer-column of figures, and, if wished, the word "decimals" over the decimal column.

Now, what is a Gram? or rather, the values, metrically expressed, of our present awkward weights?

		Prussian.	Practical.	Precise.
Grain	I =	0.06	0.06	0.065
℥	I =	1.25	1.25	1.29
3	I =	3.75	4.0	3.89
3	I =	30.0	32.0	31.0

The "practical" table alone concerns us. The "Prussian" [by order of the Prussian Ministry, Aug. 29, 1876] is given merely to show that our table is even nearer the actual truth than one which has been proved by actual experience to

answer every purpose. The values of the grain and scruple are a little too small. As they are used for powerful drugs this is an error in the right direction. The values of the drachm and ounce are a trifle too large, but the proportions and therefore the ratio of drug to the vehicle are preserved.

A prescription written metrically is always proportionate, and whether the pharmacist uses pennyweights, pounds, or tons; gills, pecks or chaldrons; pints, gallons, or hogsheads, the ratios are preserved, and a teaspoonful dose contains the same amount of medicine.

As regards administration, a teaspoon represents five grams, a tablespoon twenty grams; for a teaspoon holds one and one-third fluid drachms, a tablespoon a trifle more than four times as much.

In the Metric System *everything is weighed*, thus obviating the difficulties of evaporation, refraction and adhesion, and obtaining more conveniently, more exact results. In our old "systemless system" some fluids were measured. How shall we obtain with weights, the desired bulks of fluids with varying weights? Must we learn the specific gravity of all fluids?

Not at all!

1. Fixed oils, honey, liquid acids and chloroform, must at present be prescribed in our old weights, not measured, according to the pharmacopia. Here change old weights to metric ones.

2. Not enough chloroform or ether is included in any one prescription to admit of harm arising from the amount contained in a single dose, even were their weights regarded as the same with that of water. Moreover, it is not difficult to remember that ether weighs seven-tenths as much as water, chloroform twice as much as ether.

3. There remain infusions and tinctures, glycerines and syrups. These four are used in bulk as doses, or as solvents or vehicles. The former two may be regraded as identical in weight with water; the latter two as one-third heavier, and when prescribing these we need merely write, by weight,

four-thirds as much as we should write for, were we prescribing water, and we obtain an equal bulk. The teaspoon or tablespoon dose will then contain the desired amount of the drug employed.

Or, simplest of all we can make any mixture up to any desired bulk merely by directing the druggist to use enough of the vehicle to bring the whole mixture up to the requisite weight for that bulk.

The Metric Bureau, 32 Hawley Street, Boston, will furnish metric prescription-blanks to order, to druggists or physicians at four-fifths printer's rates, or any blank can be made sufficiently metric by a perpendicular line at the right, headed *Grams*.—*Buffalo Med. and Surg. Journal*.

ARTICLE V.

The Southern Dental Association.

At a united meeting of the Southern Dental Association and the American Dental Convention, held at Oakland, Md., August 14th, 1877. Dr. W. H. Atkinson, the President of the American Dental Convention, in his opening address, informed the delegates present, that a Committee of three had been appointed by the American Dental Association at its last meeting, to which seven more members had been subsequently added, for the purpose of reporting a plan of organizing the Association into permanent sections, and that to this same Committee had been referred the subject of the formation of a National Representative Association of the Dentists of the whole country. Dr. Atkinson, also, in the same address remarked that he hoped that this Committee would so work as to accomplish what was intended years ago, that is, to have an organization made up of representatives from all State Societies.

The Southern Dental Association at this Oakland meeting, was presided over by the 1st Vice President, Dr. A. C. Ford, of Ga., the President, Dr. S. J. Cobb, of Tenn., being detained at home, on account of illness.

Acting upon the information thus promulgated by Dr. Atkinson, the American Dental Convention before the close of the meeting, appointed a Committee of ten to meet at Niagara Falls, on the day before the meeting of the American Dental Association, in connection with the Committee of the latter body, and also a Committee to be appointed by the President of the Southern Dental Association. Dr. Cobb, when notified of this action, at once appointed a Committee to represent the Southern Dental Association, and actively engaged in efforts to bring about the formation of a National Association. He also assumed the responsibility, after consulting the prominent members of his Association, of changing the place of the next meeting from Atlanta, to Niagara Falls.

Accordingly, the Committees of the Southern Dental Association and American Dental Convention met at Niagara Falls, on Monday, August 5th, 1878, expecting to find there a similar Committee from the American Dental Association.

At the first meeting of these Committees, it was apparent that the Committee on Sections, of the American Dental Association, had no power whatever to even consider the subject of the formation of a National Association, and a subsequent meeting more largely attended than the first, revealed the fact that the American Dental Association had not the slightest idea of giving up their organization for the purpose of uniting with the two other Associations in the formation of a National one. The majority of the members of the Committees from the Southern Dental Association and the American Dental Convention, were greatly disappointed at this result of an effort they had confidently imagined would lead to the organization of one National Association, and the mistake of supposing that the American

Association was favorable to such a project, was due to the statement made by Dr. Atkinson, the President of the American Dental Convention, in his opening address at the Oakland meeting.

The following is the form of notice sent to the members of the two Committees by their respective Chairmen :

"DEAR SIR.—The members of the Committees appointed by the American Dental Convention and the Southern Dental Association, for the purpose of perfecting their report on the subject of the formation of a National Dental Organization, will please meet punctually at the "Cataract House," Niagara Falls, on Monday, August 5th, at 9 o'clock, A. M., where, it is confidently expected, a Committee from the American Dental Association will be present with us. The importance of this movement makes it imperative that the above Committees shall be well represented, and we therefore cannot too strongly urge your punctual attendance."

The members of the Committee on Sections, of the American Dental Association, were very confident that no power had been given them to act in this matter, and in proof of this, referred to the printed proceedings of the Chicago meeting, wherein no mention whatever of this matter occurs.

On Thursday morning, August 8th, the Southern Dental Association met at the "Cataract House," Niagara, Dr. S. J. Cobb, presiding, and Dr. E. S. Chisholm, Rec. Secretary. Some thirty members of this Association were at the Falls, and after transacting its regular business, and a free discussion concerning the failure of the effort to organize a National Dental Association, the Southern Dental Association proceeded to elect the officers for the ensuing year, as follows :

President.—Prof. F. J. S. Gorgas, Baltimore, Md.

1st Vice President.—Dr. L. D. Carpenter, Atlanta, Ga.

2nd Vice President.—Dr. J. R. Walker, New Orleans, La.

3rd Vice President.—Dr. John G. Wayt, Richmond, Va.

Corresponding Secretary.—Dr. A. C. Ford, Atlanta, Ga.

Recording Sec'y.—Dr. E. S. Chisholm, Tuscaloosa, Ala.

Treasurer.—Dr. H. A. Lowrance, Athens, Ga.

Executive Committee.—Dr. W. C. Wardlaw, Augusta, Ga., Dr. G. W. Winkler, Augusta, Ga., and Dr. G. W. H. Whittaker, Sandersville, Ga.

Augusta, Georgia, was selected as the place for the next annual meeting, which will be held on the second Tuesday in July, 1879. As the Georgia State Dental Association meets in Augusta, at the same time, and also the Associations of South and North Carolina, near this time, it is confidently expected that the next annual meeting of the Southern Dental Association will be the largest known in its history.

ARTICLE VI.

Pyorrhæa Alveolaris.—A Case in Practice.

Mrs. M——, thirty-five years; nervo-sanguine temperament; general health good: called for consultation in regard to her teeth and gums, which were causing her much pain and uneasiness.

HISTORY OF THE CASE.—She had been troubled for several months with an uneasy feeling, sometimes amounting to pain in the gums and teeth of both the upper and lower jaw. The teeth would at times appear elongated; become quite loose and painful, especially to the touch. The gums swollen and tender, bleeding readily, so as to interfere with her customary use of the brush. Was troubled with a disagreeable taste, and fetor of the breath, especially on rising in the morning. Had received some treatment, consisting of mouth washes, hypodermic injections of aromatic sulphuric acid in the borders of the gums, but with no apparent benefit. Through the advice of her dentist she had recently had the first and second left lower molars which, were very loose and painful, extracted, with the hope of re-

lieving her of pain, and of arresting disease. The third molar was now troubling her as the others had, and she desired to know if anything could be done for her relief without the loss of this tooth.

On examination, I found the teeth, which evidently had been well cared for, all more or less loose, and painful on percussion. This was especially the case with the tooth complained of—the third left lower molar—and the molars and bicuspid of the opposite side; the central incisors of the lower jaw, and the left central and lateral of the upper, and the molar and bicuspid on the right side, upper.

The gums were of a dark livid color; lax, and very much thickened, especially at the gingival border, which was deeply festered. Being deprived of a part of the epithelial structure, the surface had a polished look, and bled easily; at some points, as at the anterior border of the incisors, the gum was entirely denuded of its epithelium and the surface had become granulous, covered with fleshy buds, small nipped vegetations, bathed by a peculiar oozing, as frequently seen on the granulating surface of a wound. The characteristics of fungous gingivitis. An examination with an exploring instrument, which could be readily passed underneath the gum nearly to the apex of the roots of several of the teeth, revealed a ring of hard, nodulated, rough, dark brown deposit on the roots of the teeth beneath the gum; this deposit was found to reach nearly to the border of the alveoli, from the ulcerating surfaces of which pus was constantly being thrown off. We have here a well marked case—as I understand it, of what has been designated as “Riggs Disease,” or *Pyorrhœa Alveolaris*. It is in fact, a case of ulceration of the alveolar border, induced or kept up by this ring of deposit around the necks of the teeth. The etiology of the case is at present somewhat obscure, and has not, we believe, been very definitely settled.

There are several constitutional disturbances which might induce ulceration of this bony tissue, and when once set up, the rough deposit soon takes place, which in turn serves to

maintain the ulcerative process, and consequent loss of the alveoli; thus the first step in the treatment is clearly indicated, viz:—the perfect removal of this deposit from the necks of the teeth. With instruments similar to those suggested by Dr. Riggs, we removed as perfectly as possible, all the deposit at the first sitting. Chloride of zinc in crystal was applied to the ulcerating surfaces by passing it under the gum around the teeth on a little cotton, wound on a broach. Tincture of Iodine, full strength, was used as a topical dressing; a tonic and astringent mouth wash with potassium chlorate, was recommended to be used after each meal, and at night, with as thorough use of the brush as the condition of the gums would allow. The first application of the zinc gave little or no pain. On the second day, the teeth were again thoroughly examined for any remaining particles of deposit, and the zinc and iodine again used; some pain followed this application, lasting but a few moments. This treatment was repeated daily for six days, omitted on the seventh and renewed on the eighth and ninth, when the patient left the city. The improvement following this treatment was very marked; the gums had assumed a normal color and appearance, the teeth ceased to be painful on percussion, and had become firmer as the tonicity of the peridental membrane was restored; hemorrhage from the gums, and the secretion of pus from the ulcerating borders of the alveoli had ceased almost entirely. The disagreeable fetor, one of the worst features in this case, had also disappeared. What the final result of the case has been, we cannot say, as the patient has not been heard from since she left the city, but we feel confident, judging from the result following this treatment in various similar cases, that if thoroughly carried out in this case, the disease has not only been arrested, but the hard and soft part alike restored to a healthy normal condition. Our experience with the chloride of zinc in these cases has been much more satisfactory than other treatment.—*Dr. Eames.—Missouri Dental Journal.*

EDITORIAL, ETC.

EDITORIAL CORRESPONDENCE.

ORKNEY SPRINGS, VA., AUGUST 12TH, 1878.

My Dear Doctor.—That was a shrewd suggestion, or remark, which came from one of my patients the other day: "You dentists," said he, don't get enough of your own breath, and too much of other people's. This condition of minus oxygen which all who handle the excavator feel to a greater or less extent, had so far run down your humble associate, as to make him feel that unless the ordinary occupations of life could be substituted for a time by something less confining, and his present breathing by something more oxygenizing than the stifling atmosphere of the city, he was in a fair way of compounding with the creditors by whose tolerance he holds a lease of life, and indeed of throwing up that lease altogether. And so, not willing to be made a martyr of, even in the blessed cause of dental science, I have made a temporary abandonment of the "means whereby we live"—i. e., the office and laboratory, the chair and the lathe, and have betaken myself to the Mountains of Virginia, on the slopes of which is located the watering place whose name stands at the head of this epistle.

How rich in natural gifts is this old State, the birth place of both of us! The gold, iron, coal, minerals, plaster, are so far only conjectured of as to abundance and value; and in mineral springs as well, is she truly bestrewed. Indeed there is no country on the civilized earth where so many and so various fountains of health well up, as in this Appalachian range of mountains. Within a few yards of where I sit, are alum, chalybeate, magnesia, soda, arsenical and other springs,—half a dozen qualities of medicinal waters welling out of the mountain side, and possessing therapeutical virtues of marked value. Their effect is seen in the improving appetite, the elastic step, the clearing

complexion and the sound sleep, while the pure, cool, bracing mountain air and the generous diet are truly renovating. Dyspepsia flees, the eye brightens and the spirits rise, the pulses beat fuller and stronger, and the invalid or the simply "run-down" man turns back the fast-moving shadow on the dial of time not a few degrees.

I am out of the reach of politics,, and even exchanges do not get this far. The instinct of the healer prompted me to bring a few pairs of forceps and some palliatives, for which occasional use is found, but the prime idea here is relaxation. The only hours are for meals and sleep, and the only task assiduously pursued is the swallowing of the pleasantly cool water of the "Bear-Wallow" Spring, so-called because of a tradition that in the days when the "forests primeval" covered these grounds the bears used this spring as a bathing place. The name is not suggestive of its qualities, which are tonic, diuretic and alterative, starting the kidneys and moving the liver as effectively and far more beneficially than mercurials. For "run-down" people, ænemic and chlorotic girls, and broken down women and dyspeptics, I am sure that these waters, if intelligently used, will greatly relieve.

Why cannot we, with all our knowledge, formulate compounds which will substitute these? These few grains of iron and magnesia and lime in the gallon of water seem so inadequate to the effect they certainly produce; and yet the wisdom of our chemists stands helpless to do what the tonic and alterative waters of the old and new world accomplish.

I wish our friends from the South, who a few years ago so strenuously advocated, in common with some from other places, the doctrine of the nutrition of fully formed teeth, and the dogma that the internal administration of lime-salts would avert caries, could travel around among these mountains and notice the teeth of these mountaineers who are raised on lime water. I am sure their ideas as to the prevention of decay by such means would be modified, for I have rarely seen among any rustic population, caries so widely prevalent. It is rare to see a perfect denture, even in the mouth of a young person. It is said, that some of these mineral waters contain free sulphuric acid in small quantity, but it is hardly possible that this minute

quantity could injure the teeth ; besides which I doubt the fact, as the tendency of this acid to form lime-salts is so great as to preclude its existence in a free form, and then too the most of these people do not drink the mineral waters, as a rule.

Two beautiful centrals which I filled four years ago, and prided myself on having done it more than ordinary well, faced me this morning, dead. The fillings were not very large, or seemingly near the pulp, and are themselves all right, but the pulps have perished. The lady is the frequent bearer of children—always has a new baby on hand. Can this condition cause, or help to cause this calamity ?

But this paper has grown unconsonably, and is, I realize, prosy. The truth is, one feels little like thinking or writing here, and so I will stop.

Yours truly,

J. B. H.

Mal-Nutrition.—Its Causes.—In the new edition of Ringer's Hand-book of Therapeutics, is a section on "Phosphate of Lime," which is suggestive, as bearing on the subject of mal-nutrition, its causes and associated conditions ; and it is worth a careful study by those who fancy that lime-salts in deficient quantity is in any way associated with rachetis. Ringer truly says, "wherever cell growth is active, there is phosphate of lime in excess, and this holds good with regard to either healthy or diseased growths ; for this salt is found to prevail in disease associated with rapid formation." Bearing in mind the fact that the intercellular fluid is acid and that phosphate of lime is acid, we see how reasonable it is to expect that this salt may be found in excess in this fluid ; and bearing in mind, further, that their diffusive power is very small—that only a few grains pass into the blood, *i. e.*, of ammoniated phosphates—we see the weakness of a theory which expects nutrition from artificially ingested phosphates.

It is not a lack of phosphates, but a lack of the power to assimilate these ; it is not lime-salts we need, but the power on the part of the system to take up and appropriate them, that the hard tissues lack development. There is an abundance of free and soluble phosphates of lime in the system of any child

to make ten sets of teeth—indeed, as Ringer shows in defective nutrition the urine is loaded with phosphates, but that it is the *power of appropriation* that is wanting. If the teeth and tissues are starving, it is not for lack of proper food in the system, but from want of power in the system to work up these materials into hard structures. There is usually in all ordinary food abundance of phosphate of lime for the ordinary uses of the system, and if the teeth of our children suffer, we must look to some other means for a correction of the trouble.

It seems doubtful if phosphates, other than those incorporated by nature with our food, pass into the blood, since this artificial administration causes no augmentation of their salts in the urine; but however this may be, it is certain that phosphate of lime, as a therapeutic agent, is with difficulty assimilated, in spite of the fact that it is readily soluble in the free acids of the gastric juice. Just why phosphate of lime is useful (as Beneke shows) in those diseases in which the urine is loaded with it, is certainly a difficult question to decide; and our knowledge is deficient here, as in many other directions.

Of the therapeutic value of phosphates, we are not disposed to fly in the face of authority, and question, but that the administration of this or any other salt of lime, in the absence of proper digestion, will aid in the elaboration of tooth structure in the foetus or infant, we have not the least faith. And the food in ordinary use, we are sure contains an abundance of such materials for the ordinary wants of the system.

H.

BIBLIOGRAPHICAL.

Questions on the Structure and Development of Human Teeth.

—By C. L. Ford, M. D., Professor of Anatomy and Physiology in the University of Michigan, Ann Arbor. Douglas & Co., publishers.

A pamphlet of 16 pages, embracing some 350 questions on the subject of Teething, the Alveolus, Vascular and Nervous supply

of Teeth, their structure, etc., the bones, muscles, saliva, and comparative anatomy of teeth. Useful to the dental student as formulating his ideas of what he is to study. As the answers to these questions are not given, the questions themselves suggest fields of research to the student worthy of being in the hands of every student.

MONTHLY SUMMARY.

The Impurities and Tests of Chloroform.—A. H. Mason says: The impurities or foreign ingredients which have been detected hitherto are alcohol in excess, aldehyde, ether, hydrochloric acid, hypochlorous acid, and empyreumatic or chlorinated oils. The presence of the two former is easily detected by physical and chemical means. The acids would be present owing to decomposition, or with the chlorinated oils, owing to imperfect purification.

To detect the presence of alcohol, if present, the addition of a little chromic acid will cause the chloroform to turn green. Dr. Davy states that if a little of the suspected substance is heated with a solution of molybdic acid in sulphuric acid, it turns blue, if alcohol be present, and as he found all samples of English manufacture were affected by that test, he assumed that all English chloroform is adulterated. According to Roussin, pure chloroform, shaken up with dinitrosulphide of iron, remains colorless, but if it contains alcohol, ether, or wood spirit, it acquires a dark color. A few years ago I applied this test, but without success, although contaminated specimens were experimented upon, and to ensure the purity of the salt I got some manufactured by an eminent firm of manufacturing chemists. The presence of acids or of chlorinated oils will be evident from the disagreeable odor. In the administration of chloroform the presence of these chlorinated compounds to any appreciable extent produces a marked effect upon the system. They occasion a peculiar throbbing headache, and a rapid prostration of the vital powers. These symptoms may be observed when the chloroform is inhaled only for a short time; and there can be no doubt that they are very often the causes of the discomfort so often resulting from the free use of impure samples of this anæsthetic.—*Chemist and Druggist.*

Treatment of Furuncles by Arnica.—Dr. Planat, of Nice, claims that arnica has the power of aborting an eruption of boils, except when due to diabetes, with extraordinary rapidity. His method of employing it is very simple. In order to render its action on the small vessels more energetic, he applies it directly to the inflamed spot in the form of an ointment, of which the formula is as follows: Extract of fresh arnica flowers, 3 ijs., honey, 3 v. If the mixture be too fluid, he adds powdered lycopodium or althææ, or some other inert powder, until it acquires the proper consistency. It is then spread pretty thickly on a bit of oiled silk or diachylon plaster, and applied directly to the boil. It is rarely necessary to renew the dressing more than once in twenty-four hours. As a rule, two or three dressings are enough to make the furuncle abort, no matter what be the period of its evolution.

A curative action is also obtained by the internal administration of the drug. Dr. Planat gives from three to four drops of the tincture, largely diluted, every two hours, and he has seen the furuncular eruption disappear very rapidly under the treatment.—*Jour. de Med., etc., de Bruxelles.*

Therapeutic Value of Nitrite of Lead.—The late Dr. Madison Marsh, of La., a few years ago urged upon the profession, through the columns of this journal, the very great value of nitrite of lead in many skin affections and superficial erosions. Some recent observations of an Italian physician, Dr. Galletti, add further evidence on this point. This writer states that he has recently effected a cure in three cases of epithelioma, in one of which the part affected was the nose, in a second the cheek, and in the third the sternum. The mode in which he applied the remedy was by dusting the powder over the affected part, and recovery took place when this had been done about four times. Two obstinate ulcers of the foot, which had proved rebellious to other methods, quickly recovered under the same treatment. Dr. Vanzetti has recently recommended the use of the nitrite of lead in onychia maligna.—*Med. and Surg. Reporter.*

Stillbeine, a Preparation for Cleansing Instruments.—This handy preparation is simply a combination of rubber and impalpable emery powder. It comes in tablets of the shape and size of the ordinary rubber eraser. It removes rust and blood-stains, etc., immediately, and without scratching or soiling the instrument. All that is necessary is to rub the instrument with the composition, when it rapidly acquires a brilliant polish.—*Annee Med.*

Skin Grafting in the Colored Races.—A French naval Surgeon, Dr. Maurel, stated at a scientific meeting in Paris, that during a two years' residence at Guiana, he had made numerous experiments on epidermic transplantation, placing the graft on persons of different race and color. He found that not only did the graft take well, whatever description of transplantation was made—whether transported from the skin of a black to that of a white, or the reverse—but that there always remained a whitish line at the point of junction, wherein pigmentation was not produced. The pigment disappeared when a graft was transplanted from a black to a white person; but when the two individuals were highly colored, the graft remained black, except at the point of cicatrization.—*Med. and Surg. Reporter.*

Death under Ether.—A coal-porter, over fifty years of age, was admitted into the London Hospital for strangulated hernia last week. He was a well-developed man, and had been the subject of inguinal hernia more than three years, but till the last week had always been able to restrain it, and had never worn a truss. He had never experienced any special inconvenience from the rupture till four days before his admission to the hospital, when he was troubled with abdominal pain, complete obstruction of the bowels, and frequent vomiting, latterly becoming fecal. His general health had been failing in an increasing degree during the last few years, so that he had sought medical advice. When admitted to hospital, he complained much of abdominal pain, and was unable to reduce his rupture. When examined, he presented a large scrotal hernia, somewhat tense. During the examination, he began vomiting fecal matter. Taxis having been used, but the symptoms remaining unrelieved, it was considered advisable to place the man under an anæsthetic. The house-surgeon accordingly administered ether, using not more than an ounce and a half in all. The patient came under the influence of the ether rapidly, and without difficulty or adverse symptoms. The local examination was then proceeded with. The patient's respirations were perfectly regular, and his pulse good, when, about six minutes after inhalation began, a sudden spasmodic inspiratory sound was heard, as if he were choking. His tongue was immediately drawn forward with the forceps; but respiration had ceased, although his pulse continued to beat for another half minute. Silvester's artificial respiration was employed, but no spontaneous inspiratory effort followed. During the artificial respiration, some fecal matter came up into the mouth. These efforts continued a quarter of an hour, but proved useless. At the *post-mortem* examination, the left ventricle was found contracted; but the heart appeared healthy. The lungs were extremely

- congested. There was fecal staining of the œsophagus and larynx, but no such matter had been drawn into the lungs. The liver was healthy. The kidneys were slightly granular, but not congested. The portion of small intestine which had been strangulated was about twenty inches in length, extremely congested, with commencing peritonitis upon its surface. It must be remembered that in such a case as this, where strangulation had existed four days and was attended with constant vomiting and a feeble circulation, there were many circumstances predisposing to death besides the administration of ether.—*Med. News.*
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The Antiseptic and Therapeutic Properties of Boracic Acid.—The *Lancet* states that G. Polli has reported, at a recent meeting of the Academy of Sciences, of Lombardy, the results of numerous researches in which beer, meat, eggs, blood, and urine were treated with boracic acid and borax for thirty days, during the summer time, and were found still to retain their freshness, and to present no traces of fermentation having taking place in them. In control experiments, on the other hand, without the addition of the salt, but in some instances, with the addition of sulphate of soda, the fluids passed into a state of complete decomposition in the course of fifteen days. The energetic disinfecting power possessed by boracic acid and borax, and the facility with which these substances can be absorbed into the economy, led Polli to recommend their employment in diseases in regard to the infectious nature of which no doubt exists, or in which septic conditions readily arise. He adduces several examples in which the febrile conditions of tuberculosis underwent diminution. No benefit was obtained by Professor Visconti from experiments made with these remedies in malaria, though other observers have arrived at a different conclusion. In chronic cystitis the muco-purulent discharge quickly diminished, and even altogether disappeared in the course of a few days, and rapid improvement occurred in cases of bad suppurating wounds when they were applied externally. The dose recommended by Polli, is 75 grains of boracic acid and 150 grains of borax per diem.—*Med. and Surg. Reporter.*

Vermilion.—Vermilion is a mixture of sulphur and mercury, and is frequently found to turn to a dark brown color if exposed to the atmosphere. A remedy for this is said to be to add one-eighth part flour of sulphur to the paint when mixing. To detect adulteration in vermilion, place a little on a red hot iron; if pure, it will evaporate entirely; if not, there will be an earthy residue.—*Druggists Circular.*

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ARTICLE I.

The American Dental Association.—CONTINUED.

WEDNESDAY.—EVENING SESSION.

Wednesday evening's session of the Dental Association opened at the appointed hour, and after the reading and approving of the minutes of the morning meeting, President Rehwinkle called for a report of the Committee on Credentials, and Dr. Shepard gave the names of delegates in attendance since the last report. He also presented several accounts, which were ordered paid.

The discussion of the papers presented on Histology and Microscopy were taken up, whereupon Dr. McQuillen took the floor and paid his respects to the voluntary contribution of Dr. Bodecker. He said he could not take it for granted that a man had made some wonderful discoveries unless the specimens were produced. "We want more original investigation and not so much of the text books," the speaker said: a man who makes a discovery, like a hen that has laid an egg, goes around cackling about it; and then some-

body says here in such and such a book, there is a similar case. It is important that a familiar acquaintance with its literature should be had, in pursuing investigation upon a certain object.

Dr. Block spoke further of the manner of preparing specimens for the microscope. The speaker did not know that the mode recommended by Dr. Bøedecker was new, but he was not ready yet to take in all that was said with reference to the preparation of living matter. The Doctor spoke at some length with reference to the cells, but as his views were presented in a manner very scientific, they would not be of interest to the general public.

After further brief remarks by Dr. Dean, this order of business was passed and Dr. Fillebrown moved the adoption of the minority report of the Committee on Sections. Carried.

The discussion of the papers on Histology and Microscopy was again, on motion, declared in order.

Dr. Atkinson then addressed the convention and defended in an able and earnest manner what had been claimed in the paper of Dr. Bøedecker.

Dr. McQuillen followed with another emphatic appeal for original investigation, especially with the microscope, but begged that investigators would not start out with any preconceived theories.

This order of business being passed the report of the Committee on Pathology was called for and Dr. Atkinson read a strictly scientific paper, which was subsequently discussed by himself and Doctor Spalding.

The convention then adjourned until Thursday morning.

THURSDAY.—MORNING SESSION.

Pursuant to adjournment, the Convention was again convened yesterday morning, promptly at the appointed hour of ten o'clock.

Reports from the Committee on Dental Education was called for, and Dr. George A. Fredericks presented a report in which he held that the day of private tuition has gone by ;

that the public and the profession demand a collegiate education in dentistry. It being a specialty, dentistry should be taught by specialists in the art in actual practice, and a medical course ought to precede it. There was still room for improvement in the practical teaching in the infirmaries connected with colleges. The most important operation in dentistry was filling. Any one who set himself up to perform the operation and was not competent, was, in the estimation of the author, worse than a thief. "A thief only steals filthy lucre; while the dentist incompetent to fill a tooth properly adds abuse to injury, for he not only inflicts unnecessary pain but steals his patient's time and money with the assurance that the tooth operated upon is put in a condition for future preservation." Dr. Fredericks recommended that the President of the Association be authorized to appoint a committee of one at every place where a dental college is located to report to the Association the advantages possessed by such institutoin, for the practical teaching of the science and art of dentistry. A second report was next read by Dr. Thomas Fillebrown, in which he took the ground that the expediency and wisdom of medical schools including dentistry in their courses of instruction, appeared for the reason that more schools and those more widely distributed are needed, so that more inducements and facilities may be offered to young men to obtain a good education. When a professional school is located there will exist a higher standard of professional excellence. Where a dental school is established there will be superior operators and superior patients. In case a student makes a mistake in entering the practice of dentistry, being not well fitted by natural abilities for it, if medically educated he may correct his error by seeking some other branch of practice. And the contrary was also true. Many a poor doctor with surgical talent, but no opportunity to use it, might become a brilliant dentist. Dentistry as a specialty of medicine was perhaps more distinctly a branch of surgery, but in either case distinctly medical. When physi

cians know as much about dentistry as they should, and when dentists were equally well informed with reference to medicine, all questions about recognition or mutual respect would cease to be raised, and "there would be no sickly sentimentality about claiming fellowship with a profession that disclaims us, for all will be of one family, owing the same *Alma Mater* and laboring for the same common good—the amelioration of human suffering and the elevation of the human race."

In concluding his report Dr. Fillebrown offered the following preamble and resolution:

Whereas, Dentistry is a specialty of medicine and requires, as do other specialties, a thorough medical education as preliminary to its most successful study and practice:

Resolved, That we deem it expedient and for the best interests of the practice of dentistry that existing medical schools so enlarge their curriculum as to include efficient instruction in dentistry, and thus make the requirements for graduation the same for this as for other specialties of medicine.

Dr. Crouse read a third report in which he urged that all the respectable colleges should form an Association and adopt certain regulations in regard to dental education and that the profession at large would endorse as high a standard as they might see fit to adopt. The State Examining Boards should not grant diplomas to those who are merely complying with the law. Dr. Crouse insisted that dentistry must be a specialty of medicine, and this can only be done by the students taking the degree of M. D. in the regular school of medicine. The dentist to fulfill his mission in the full sense of the term should be medically educated.

Discussion being in order Dr. Hunt said the subject was of great importance, but the objection to the proposition of Dr. Fillebrown, presented in his preamble and resolutions, was that it put the matter of education outside of the control of the dental profession. It was a mistake to suppose that medical instruction was not given in dental colleges. The success of a dental or medical college lay in the con

scientious discharge by the officers of the duties and responsibilities resting upon them, and either institution was bad if not properly conducted. Whether dentistry was a distinct profession or not, was a subject that did not connect itself with dental education. Dr. Hunt gave notice that when the discussion was closed he should move the reference of Dr. Fillebrown's preamble and resolution to the section on education.

Dr. L. C. Ingersoll, of Iowa, said that in all professions the tendency had been downward instead of upward. In the effort to elevate the dental profession at this time, it seemed to him that the commencement was being made in the centre when it should be lower down at the beginning. It was elementary and not medical education which was wanting in dental education. There was too much made of the question of medical instruction and not enough of that pertaining to the elementary or starting point. There were young men who commenced the study of medicine who, at the same time, would be found incapable of writing three or four lines of good English. Go back to the old proverb, said the speaker, that "mind makes the man." All thought is in language. All that we know is in the medium of language. Insist on good mental acumen, or how will men be able to comprehend the terms in use.

Dr. Taylor, of Ohio, said that when he beheld the interest that was now demonstrated in dental education, it took his mind back to the time when education was denied to men. He advocated an extension of the present curriculum of study in the dental colleges. He believed that dental students should pass an examination in anatomy, physiology and pathology equal to that required of medical students. True dental science was true medical science.

Dr. J. Foster Flagg, of Philadelphia, said that Josh Billings, a well known and highly esteemed gentleman, had said "they are sensible people who think as we do," and he therefore esteemed the last speaker as a highly sensible gentleman. He favored a trial of the medical colleges.

The dental department of the Harvard University was the first inaugurated, and it was by all means the best; that of the University of Pennsylvania was the last, and it was decidedly the worst.

Dr. John Allen, of New York, one of the veterans of the profession, expressed himself as delighted with the advance which had been made in the matter of dental education since the days of his youth in the profession, when there was no such thing as dental schools and dental journals and conventions. A medical education was highly essential to the successful practice of dentistry.

Prof. Weatherbee, of Boston, desired to add his testimony to the general stock in trade regarding dental education, because it was something which he had taken great pleasure in favoring. After a trial of dental colleges of forty years some men were desirous of putting the profession out to nurse, and recommended an education in medical colleges. They say it is necessary to success. It was a lie to say this—that was plain talk, but people could understand it. Students of dental colleges did not receive the honors of the institution until they were well up in a knowledge of the several branches which they would pursue in a medical college. Students should first graduate in a university; then study letters, theology, and the law, before they pay attention to dentistry. Following this they should take a three years course of medicine.

Dr. Darbee, of Philadelphia, a representative of the University of Pennsylvania, waiving anything that had been said of the institution that was not complimentary to it, said for the encouragement of those who recommended a medical education, he would state that a majority of the students at the University had signified their intention to take the three years course in medicine.

Time, he thought, would prove whether the medical education was necessary. The course recommended by Dr. Fillebrown and Dr. Weatherbee would make a man taking them, forty or fifty years old, before he would be

able to do anything; before he had lived more than half his life, he would be ready for his grave. Dr. Darbee thought a young man should become a graduate in medicine, and then he could practice dentistry if he wished.

Dr. Atkinson said dentistry was medicine, and he desired to put this forth as a dogmatic aphorism.

Dr. Spaulding of the Western College of Dental Surgeons, said there was a uniformity of opinion as to whether dentistry was medicine, and whether a medical education was necessary for a dental education. The question was how far the rule could be applied and enforced. The average with dental graduates to-day was better than with medical graduates. The proposition of Dr. Fillebrown would result in the dental profession being swallowed up in medicine, and it would cease to be a distinct profession. It was old enough to walk alone, at this time, and then was named of taking steps which would fuse it into the medical profession. There was need of unanimity on the subject, or the results would be very disastrous.

Dr. McQuillen favored a medical education—the broadest education for a dentist; but the question was how far it was practicable at this time. The recognition accorded to American dentistry was due to the men in and out of the dental colleges. If universities desired to inaugurate dental departments they should demand the full course of three years.

Dr. Ingersoll again took the floor, and said dentistry is a specialty of medicine, but the dental profession asked no favors of the medical profession, and had been offered none.

After further remarks from one or two gentlemen, Prof. Buckingham moved the previous question.

The question being taken on the motion to adopt the preamble and resolution of Dr. Fillebrown, the same was lost by a vote of 28 to 19.

The discussion was then continued, and Dr. Crouse made a lively attack on what he termed one-horse dental schools, and said no school should be endorsed which did not provide the full course.

The subject of dental education was now passed.

The Association then adjourned for the extra session.

THE EXTRA SESSION

opened at four o'clock with Dr. Rehwinkle in the chair. Dr. Odell, of New York, was made Secretary *pro tem.*, but soon surrendered the office, upon the arrival of the regular incumbent, Dr. Dean.

Dr. Weatherhill moved that the certificate of membership reported by the Corresponding Secretary, be adopted.

Dr. Sheppard moved as an amendment that the certificate be adopted provided that the word Honorary was prefixed to that of Member.

Some animated discussion ensued, in which it was held that the issuing of a certificate of membership to permanent members would result in some unprincipled person making improper use of it; also that men granted the certificate would in time fall in arrears, and finally never put in an appearance; but that certificate would be found framed and hung up in their office. The prudence and judgment demanded that the amendment should prevail seemed to be the prevailing sentiment, although the original motion was ably and earnestly defended by the mover, and several others.

Dr. Rehwinkle called Dr. Sheppard to the chair, and moved as an amendment to strike out the words "honorary members," and add the words, "provided that permanent members who have been regular members for five years, and are in good standing, shall, on application to the Secretary and Treasurer of this society, be entitled to the certificate of membership."

Dr. Spaulding offered the following as a substitute for the original motion and the amendment to the amendment:

Resolved, That the certificate of membership of this Association shall be conferred on honorary members.

The resolution was declared out of order.

Dr. Rehwinkle withdrew his former amendment and

offered the following as a substitute for the whole question :

Resolved, That this certificate be granted to honorary members, and to all worthy members of this Association, provided they have retained their membership for five consecutive years, upon the payment of \$—, the cost of the certificate.

After some further debate the previous question was ordered, and a vote was taken on the substitute of Dr. Rehwinkle, which was carried by a vote of 18 to 19.

It was then moved by Dr. Crouse to lay the whole matter on the table. Carried. Ayes 30, noes 17.

It was moved that the engraved plate be placed in the possession of the Secretary. Carried. The bill for the engraving of the plate was ordered paid.

Dr. Rehwinkle having resumed his position as presiding officer, Dr. Spaulding offered the following resolution and moved its adoption :

Resolved, That a committee of five on revision and engrossment of the constitution be appointed by the Chair.

In case no new amendments to the constitution are proposed by said Committee they may at their discretion cause to be printed five hundred copies of the constitution. This Committee shall report at the earliest practicable time.

Dr. Crouse moved that the matter be referred to the publication committee, with power to act. Lost.

The resolution was then adopted.

Dr. Taft moved that a committee be appointed to draft an appropriate memorial to the late Dr. George T. Barker, who was the second Vice-president of the association.

Dr. Rawls moved as an amendment to go into a committee of the whole on the subject.

Dr. Crouse moved to lay the amendment on the table; it was withdrawn by Dr. Rawls.

The original motion was then put and carried.

The chair announced as the committee, Dr. Taft, of Cincinnati, Dr. Cushing, of Chicago and Dr. Gorgas, of Baltimore.

On motion of Dr. Shepard the Publication Committee

were instructed to incorporate the constitution in the transactions of the Association.

On motion of Dr. Taft, Prof. Buckingham was added to the Memorial Committee.

The Association then adjourned until 7.30 P. M.

THURSDAY.—EVENING SESSION.

Thursday evening's session opened at eight o'clock, Dr. Rehwinkle in the chair.

The President announced that a telegram had been received from Dr. Dennis, of California, asking that the selection of the next place of meeting be postponed until his arrival.

Dr. Taft therefore moved that the selection of the next place of meeting be deferred until Friday morning at ten o'clock.

Dr. Fillebrown moved to lay the motion on the table. Carried.

Dr. Rawls moved a reconsideration of the vote last taken. Lost.

The Nominating Committee reported that Niagara Falls was the only place that had been named for the holding of the next Convention.

Cincinnati, Saratoga, Watkins, Manhattan Beach, Boston, Atlanta and Long Branch were also named by members of the Association.

On motion the nominations were closed and the Association proceeded to ballot, Doctors Rawls and Black being appointed as tellers.

On motion it was ordered that after the first ballot all places except the three receiving the highest number of votes be dropped.

On the first ballot the contest was narrowed down to Niagara Falls, Cincinnati and Saratoga, the two first named having an even number of votes.

On the second ballot out of seventy-five votes, Niagara Falls received thirty-seven, Cincinnati twenty-six and Saratoga twelve. Saratoga was dropped.

On the third ballot Niagara Falls came out victorious by fifty-eight votes out of seventy-seven.

The election of officers was next in order, and the members of the Association made choice as follows:

President.—Dr. H. McKellops, St. Louis.

First Vice-President.—Dr. L. D. Shepard, Boston.

Second Vice-President.—Dr. L. Dr. Carpenter, Atlanta, Georgia.

Corresponding Secretary.—Dr. A. O. Rawls, Kentucky.

Recording Secretary.—Dr. George A. Cushing, Chicago.

Treasurer.—Dr. W. H. Goddard, Louisville.

Executive Committee.—Drs. C. N. Pierce, G. V. Black, J. W. Keeley.

With the close of the election the Association adjourned.

FRIDAY.—MORNING SESSION.

The Association opened at ten o'clock, A. M.

The report of the Committee on Therapentics being called for, a paper was read by Dr. F. M. Odell, and discussed by Doctors Spalding, Flagg and Atkinson.

Operative Dentistry was the next subject taken up, and a lengthy paper was read by Dr. M. H. Webb, and referred to the Committee on Publication.

A second paper on the same subject, was read by Dr. D. D. Smith and referred.

Dr. Shepard was called to the chair.

Dr. J. Foster Flagg then read a paper on "Plastic Filling, as a Power in Dentistry," in which he stated that for nearly two years he had not employed one sheet of gold foil, and had completely abandoned its use. He insisted that for certain kinds of defined teeth and certain kinds of defined cavities, where it is claimed gold is the best filling, there are other kinds of filling, of a plastic character, that are better than gold.

Dr. McQuillen directed attention to two specimens prepared by Dr. Holloway, of La Porte. He said in preparation of specimens the means used in mounting them too often destroy the normal structure and have often led to the most erroneous interpretations.

Dr. Fredericks followed with a paper in which he discussed the asserted necessity of keeping the cavity of a tooth dry during the operation of filling. He cited cases in which he had successfully plugged a tooth with gold under saliva.

Dr. Stockton read an additional paper under the head of operative dentists, in which he recounted the wisdom drawn from numerous failures of a varied character. At its conclusion, the hour of adjournment having arrived a recess was taken until half-past three o'clock.

FRIDAY.—AFTERNOON SESSION.

The Association re-assembled at the appointed hour.

The subject of a certificate of membership being taken from the table, Dr. Crouse moved that the design of the certificate submitted be accepted for the use of honorary members, and the words "honorary member" be engraved in the plate.

Dr. Barrett criticized the tabling of the subject on Thursday as unfair and said that he thought it unjust, with the slim attendance at this time, to take advantage of the absence of those opposed to the matter, for the purpose of pushing it through.

Dr. Crouse moved that the discussions in relation to the certificate on Thursday be stricken from the minutes. Dr. Barrett opposed the motion. The gentleman making the motion had foolishly wasted the valuable time of the convention in the discussion, and his remarks ought to go on record.

Dr. McQuillen added a word in favor of the motion.

The Secretary gave notice that there was no record of the remarks of the gentlemen who participated in the discussion.

Dr. Crouse thereupon withdrew his motion.

On motion it was resolved that a seal for the use of this Association be procured.

The installation of the officers elect, was next in order, and was carried out in due form.

In vacating his chair, the President, Dr. Rehwinkle,

gracefully presented his acknowledgments for the support accorded him by the members of the Association, and expressed his best wishes for the future welfare and prosperity of the Association. He then introduced the newly-elected President, Dr. McKallops, who, upon assuming his position, returned his thanks for the confidence manifested in his ability by his election to the Presidency. He deemed it a high honor, and appreciating the responsibilities of the position, hoped to be able, with the assistance of those who had placed him in the chair, to satisfactorily and properly discharge the duties devolving upon him.

Returning to the regular order of business, the report of the Special Committee on Chemistry was called for.

Dr. Cushing read a report from Dr. Moel, of San Francisco, California. It treated of the destructive character of sugar acids on the teeth, and presented suggestions as to the conclusions to be drawn therefrom. It also discussed and took exceptions to the assertion that sulphuric and nitric acid is generated by the putrifaction of meats between the teeth, and in conclusion took the ground that the greater part of dental decay arises from the decomposition of starchy and saccharine substances in the mouth.

The subject of chemistry being passed—

Dr. C. D. Cook read a report on dental literature of recent issue, and criticized the various publications, both foreign and domestic, giving the important questions upon which they treat, and their relation to the profession.

Discussion being in order, remarks were made by Doctors McQuillen and Atkinson.

Dr. Shepard moved a suspension of business. Carried.

The various sections were duly organized as follows:

Section 1. Artificial Dentistry, Metallurgy and Chemistry—Chairman, Dr. Finley Hunt, Washington, D. C.; Secretary, Dr. C. S. Stockton, Newark, N. J.

Section 2. Dental Education—Chairman, Dr. J. N. Crouse, Chicago.

Section 3. Dental Literature and Nomenclature—Chairman, Dr. W. H. Atkinson, New York; Secretary, Dr. J. Taft, Cincinnati.

Section 4. Operative Dentistry—Chairman, Dr. I. J. Weatherbee, Boston; Secretary, Dr. W. H. Goddard, Louisville, Ky.

Section 5. Anatomy, Physiology, Histology, Microscopy and Etiology—Chairman, Dr. M. S. Dean, Chicago; Secretary, Dr. M. H. Webb, Lancaster, Pa.

Section 6. Pathology, Therapeutics and Materia Medica. Chairman, Dr. F. H. Rehwinkle, Chillicothe, O.; Secretary, Dr. Will Taft, Cincinnati.

The reception of the report of the Committee on Credentials was received and accepted.

The Committee on Prize Essays reported that they had received one essay only, which, they had been informed by the author, was the same one before the Committee last year and rejected by them. The Committee therefore did not feel warranted in reversing their decision.

The report was accepted and adopted.

The Committee on Appliances made a report of the new and useful inventions and appliances of the past year for the lightening of the labors of the operator and to aid him in performing his work.

It was ordered that the report take its usual course.

The special committee to whom was referred the amendment to the constitution relative to dental colleges reported that they did not deem it expedient to make any such change in the constitution. They offered the following resolution for adoption :

Resolved, That this Association disapprove of the practice of dental colleges in graduating upon less than two full courses of lectures, and believe it to be detrimental to the interests of dental education, and advise the omission of such inducements from their annual announcements.

Dr. Shepard moved a reconsideration of the action taken in adopting the resolution of Dr. Spalding providing for the appointment of a Committee on the printing of the by-laws. The resolution was then revised so as to read "that a com-

mittee of five on revision and engrossment of the constitution be appointed by the Chair. This Committee shall report at the earliest practicable time." The resolution as amended was adopted.

The committee appointed to draft resolutions expressive of the sense of the Association, on the death of the late Dr. George T. Barker, presented the following, which was adopted :

WHEREAS, In the wisdom of Divine Providence, our colleague, Professor George T. Barker, Vice-President of this Association, has been removed by death from our midst, in the prime of his manhood ; therefore

Resolved, That we feel called upon to testify, in this manner, our appreciation of his usefulness as a member of our profession.

Resolved, That we deplore his loss and regard his example, both professional and social, as eminently worthy of emulation.

Resolved, That the sympathy of the members of this Association be and hereby is tendered to the bereaved family of our lamented brother.

Resolved, That the above testimonial be inserted in the minutes of this Association and printed on a memorial page in the annual transactions.

J. TAFT,
F. J. S. GORGAS,
GEORGE H. CUSHING,
T. L. BUCKINGHAM,
Committee.

A vote of thanks was tendered to the retiring officers of the Association, to *The Buffalo Courier*, for its extended and complete reports of the sessions of the convention, and to which we are indebted for the substance of this report; and thanks were voted to the hotels, the railroads and all others for courtesies extended to members of the Association.

The recommendation of Dr. Weatherbee, during the discussion on dental education, on Thursday, that students study law, theology, etc, should be accepted as being made

in an ironical sense. This explanation is made in view of the fact that a number thought he was really in earnest in what he said.

The minutes of the session were read and approved and the Association then adjourned until 1879.

This Session of the American Dental Association, was one of the most pleasant we have ever attended, and the large number of dentists in attendance, in addition to the regular delegates, added much to the pleasure and interest of the occasion.

ARTICLE II.

Relations of the Dental Pulp to the other Tooth Tissues.

[CONTINUED.]

BY L. C. INGERSOLL, KEOKUK, IOWA.

Let us now examine the dental foramen to see if it does not teach us a lesson pointing to the same fact which I have been attempting to establish. We find that in childhood and in youth, during the period of most rapid development of tooth structure, the dental foramen is wide open, permitting the passage of many vascular canals, freighted with tooth material, for the building up process. But with the progress of the work this gateway gradually closes. The dental foramen becomes smaller and smaller, till at length we find it scarcely perceptible to the unaided eye. Here there is a reduction of the capacity for nutrition in proportion to the demand of the structure for nutrient support, and further evidence of the diminishing importance of the pulp.

I propose now to consider some objections to the view here presented.

The objection which most readily finds utterance is that to which I have alluded as a popular impression, and accepted, too, by many of the profession, viz: that the pulp is

an absolute and essential factor, not only in the construction of the tooth, but in its preservation—that it holds its elements from dissolution. When popularly stated it is this: “When the nerve dies the tooth will rapidly decay.” When stated by the profession it is this: “When the circulation of nutrient material has been cut off by destruction of the pulp, the dentine will surely tend to disintegration.”

In answering the objection in the first form stated, I need only allude to the numerous cases of pulpless teeth standing in the mouth in all their integrity—save the decay that wasted them while the pulp was alive—and such teeth have stood for many years. A little inquiry will bring to our notice, almost daily, in the mouths of our patients, teeth still firm that have been pulpless for ten, twenty or thirty years.

Should the pulp be devitalized in early life, all dentists would regard the chances of preservation of the remaining structure less favorable than when the devitalization occurs late in life, because of the greater porosity of the hard structure in early life. Yet the instances are numerous of boys and girls having teeth knocked loose by a blow or a fall, which perfectly destroyed the vitality of the pulps, and such teeth have been preserved, though greatly discolored, till advanced manhood or womanhood. Not long since I discovered two dark pulpless teeth in the mouth of one of my patients fifty-five years of age. On inquiry I learned that the accident occurred at fourteen years of age by the kick of a colt. These teeth were firm and free from decay. It needs but little inquiry to learn of cases sufficiently numerous to satisfy the popular mind on this point.

But to answer the objection to the second form stated, coming from the professional standpoint. I am aware of the preconceived notions and theories which persistently assert themselves; gaining strength by repetition. An objection, representing the views of a large number of the profession on an important point in theory and practice is worthy of a candid consideration.

- The objection is based upon the nutrient function of the pulp. It is a commonly received opinion that there is a perpetual change of tissue throughout the entire organism—that it requires but a few years at most to effect so complete a change that not one atom of old tissue remains. This is an old doctrine. It antedates dentistry and dental science. Its proofs were given to the world before the peculiar structure and organization of the teeth were known, or even before it was well understood that they had anything peculiar in their organization and structure—anything to distinguish them from bones. Has modern investigation ever given any proofs that the teeth are subject to the law of waste and supply in common with other tissues of the body? We know that the organizing functions treat the teeth in a very different manner from bones to which they are nearest allied. Bones may be wasted by disease, portions removed by fracture, or cut away by a surgical operation, and the lost parts will be restored by the organizing functions. Not so the teeth. When wasted by disease, abrasion, erosion, or a dental operation, no part of the lost tissue of a tooth is ever replaced. Dentists sometimes talk about nutrition of enamel. Why, then, is the enamel organ counted out, after the emergence of the teeth from the gum, and no longer numbered among tooth tissues? Where is the possibility of organic function being carried on with but one per cent. or three per cent. of animal tissue, while the ninety-seven or ninety-nine per cent. is of such crystalline density as to exhibit no more vascular trace than quartz? True, sensation has sometime been discovered in the enamel, and an occasional dentine fibril has turned up a loop into the enamel. But what can such exceptional cases prove more than the possibilities of abnormal structure?

Nutrition implies consumption and waste of tissue through the activity of animal functions. Where there is no waste of material there is no necessity for replacement. A structure that is composed chiefly of perishable material, like the soft tissues of the body, must of necessity require perpetual

supply of new material, which we call nutrition, else the whole structure is soon broken down. In proportion as the structure is built up of *imperishable* material—not absolutely such, but imperishable as it stands related to existence of the individual—in like proportion is the necessity for replacement by nutrition diminished.

The teeth are composed so largely of imperishable material, that it is not in accordance with the philosophy of organic life to presume, in the absence of incontestible proofs, that the hard and imperishable material would be replaced simply because the soft and perishable animal tissue is continually undergoing replacement. This would be a waste of vitality and function, of which nature is never guilty. All observed facts point to the teeth as a peculiar structure, not subject, like other tissue, to the law of waste and supply, requiring nutritive functions of the pulp only to preserve intact their perishable animal tissue.

Again, if the matured tooth in its undiminished whole, need the nutritive function and vital support of the pulp to preserve it from disintegration, every portion of the tooth needs it alike. Nature pursues a damaging course and greatly blunders when she calcifies the dentine fibrils, and thus cuts off sensation and vascular action from any portion of the dentine, if such connection with the pulp is *necessary* to preserve the integrity of the dentine. All dental observation is a defense of nature—for we find the most thoroughly calcified teeth to resist decay the longest. These hard, dense teeth, that can be drilled into and excavated without pain, are the most enduring structures known to us; while the teeth that have large pulps and large dentine fibrils, fully active for nutrition, but not for calcification, are teeth readily disintegrated, and which give no promise of long continuance.

Let us look still farther at portions of the dentine cut off from pulp nutrition by decay, instead of by the physiological process of calcification. In every tooth penetrated by extensive decay, many of the dentine tubes are cut off, and,

of course, the outlying dentine is cut off from all direct communication with the pulp. But this does not necessarily cut off all pulp nutrition; for the plexus formed near the border line of the dentine and enamel by the anastomosis of the dentine tubes and the looping of pulp fibrils is adequate to sustain vitality, for a while, in every part of the peripheral portion of dentine. But in numerous cases of extensive decay we find some portions of the walls of the cavity void of sensation, by reason of the death of the pulp fibrils. And we are all familiar with the fact, too, that when found very sensitive, if such cavities are filled and reopened after six months or a year, we often find the fibrils dead, although the body of the pulp be yet in a condition of activity and life; or the same non-sensitive condition of the walls of the cavity may have been brought about by calcification of the plexus. In either case, pulp nutrition is cut off from a portion of the dentine. And we are familiar with the further fact, that if such cavities are thoroughly filled, the whole tooth—including the devitalized portion—is preserved. Thousands upon thousands of such cases witness to the truth of this statement.

The conclusion is, that if part of a tooth in such condition may be preserved from disintegration, the whole tooth may, under favorable conditions, be preserved indefinitely from disintegration, though freed from pulp nutrition by the death of the pulp.

Another objection, or another form of the same objection, is found in the statement often made, that vitality protects the teeth from decay. Why, then, are the teeth not protected from decay? as they all have pulps. It is popularly said, too, that it is the special purpose of the enamel to preserve the teeth from decay. Why, then, with both these safeguards, are not the teeth protected from disintegration by caries? I take it that the teeth are enameled to protect them from abrasion—that they are enameled for the same reason that instruments made of iron are pointed with hardened steel, or case-hardened—to protect them from

waste of substance by use, or to give them a cutting edge. Protection from decay is only an incidental and concomitant fact.

Protection from decay by vital action in the calcification of the dentine fibrils, is in perfect harmony with the views here presented. But *arrest* of decay through vital action is of rare occurrence. Some have seemed to convey the idea in their remarks on this subject, that the *mere presence* of vitality inherent in a living pulp had some mysterious power to prevent the action of those agencies which produce decay. Facts are strongly against this notion. I need in this connection but to again refer to the rapid decay of youths' teeth from the age of fourteen to twenty, when they are in the condition of the most active vitality. Another significant fact bearing on this point is, that recent decay is seldom found in the non-vital portions of the teeth of old people; but you look for fresh decay about the necks of the teeth where vitality is still active in dentine.

In suggesting any modification of practice based upon the positions which I have taken on the relations of the dental pulp to the other tooth tissues, I am aware that the conservatism of the world is such that mankind are struck with alarm when any note is sounded not in harmony with cherished theories and adopted practices. For a number of years past we have been lulled to rest, concerning exposed pulps, by the narcotism of creasote and oxychloride of zinc.

The profession has been led to believe that the destruction of the pulp is well nigh equivalent to the destruction of the tooth; that therefore the slightest evidence of lingering vitality however feeble, is a sufficient warrant for persistent treatment ending with the oxychloride capping; and that such means are specific in restoring the healthful condition and functional activity of the pulp. Hope is a good thing—a most excellent quality of mind, and trust for a realization of the thing hoped for is a counterpart of the same. But hope and trust must have a basis of facts sufficiently broad and deep, else hope and trust are not reasonable.

I ventured the opinion, at the last meeting of the American Dental Association, that we had hoped in many cases without good foundation, and trusted too implicitly in the treatment, and believed too confidently in results. I hold these opinions still. I would not have the profession abate one whit the desire, to preserve exposed and diseased tooth pulps, nor the study and experiment requisite to that end. But I would have them diagnose more thoroughly their cases, observe more critically their successes, and modify their practice by a more careful judgment of physiological and pathological facts.

Dentists must acknowledge that the diagnosis of a diseased pulp is extremely difficult ; not so much as to its present condition as to its vital power and susceptibility to treatment. If we bear in mind the facts as set forth in this paper, I think we shall conclude that the pulp has not a *tenacity of life*, except under the most favorable conditions. Its gradually diminishing substance and gradually diminishing functions, and its tendencies toward obliteration, should be considered ; and should enter into a diagnostic opinion as to the results of treatment.

I believe that a judgment based upon sensation, or the impression of pain, has led many a hopeful and anxious dentist astray. It is not a very uncommon occurrence to find teeth that have wasted away—the entire crown, including the pulp—without causing any serious pain or discomfort. The treatment of teeth having this tendency might greatly deceive an operator who trusted chiefly to sensation in making a diagnosis. This quiet condition of an exposed pulp is a fearfully morbid condition. To cap and fill over such a pulp because it is quiet enough to tolerate the presence of foreign material, as it has tolerated contact of the atmosphere and fluids of the mouth, will not arrest the tendency to devitalization. “Failure” may be written on the record in less than six months. I would not even attempt treatment of pulps in this class of teeth.

Again, dentists are no doubt often deceived by the quiet-

ing influence of anodynes and narcotics. A patient comes into the office having a tooth that has often been the cause of severe pain. The dentist applies the remedy and almost instantly the pain ceases; and so long as it is narcotized it gives the patient rest. To assume, therefore, that this freedom from pain is evidence of health and restored function is a false assumption. It is no more evidence after five or ten days than the first day.

While penning this part of my paper, two cases were presented at my office by a lady from a neighboring city. For three weeks she had been annoyed, and at times greatly distressed, with pain on the right side of her face. She identified the second superior bicuspid as the source of it. On examination I found her teeth well cared for, both personally and dentally. The teeth in that locality had been filled in a most skillful manner, so far as I could judge from external appearance.

The offending bicuspid had in it a large gold filling, inserted about a year and a half previous, also another in the first molar. I instituted inquiry to learn the facts and circumstances attending the operation. I learned that both teeth had been treated for supposed exposure or sensitiveness of the pulp, and capped with oxychloride of zinc. My diagnosis of the case was that in the bicuspid the pulp was in a high state of inflammation, involving the peridental membrane—that in the molar the pulp was wholly devitalized, decomposing, and abscess imminent on the palatine root. I drilled into the crowns of both teeth, found the capping as represented, and the pulps according to diagnosis, except that the pulp in the molar had not become as thoroughly disorganized as I anticipated.

No doubt these teeth stood on the record of a good operator marked "success." All painful sensation was allayed during his treatment and filling, and for six months after. Suppose that the operator in these cases had considered the tendency of the pulp to obliteration, and the slight tenacity with which it holds its vitality when diseased, or disturbed,

even by slight causes; he might have judged it better to extirpate the pulps of these teeth at *first*, than to run the risk he did; though with his confidence in the popular treatment he *might not* have considered it *any* risk.

Yet every dentist should consider the risk, in view of the large number of failures in the treatment. He should consider the many teeth in which the pulps have died when decay had penetrated the dentine but slightly, and the operator had never thought of any risk in filling.

How many of us have been surprised on examining such cases in one or two years after filling, to find the pulps dead or dying? He should consider the number of cases in which the death of the fibrils has caused disease or death of the pulp.

He should consider the physical idiosyncrasies of the patient, the history of other cases, if any, in the same mouth; and the complete or incomplete organization of the teeth.

Considering the points above enumerated, we may well conclude that of the cases needing treatment of any kind, as a means of preserving the pulp alive, only the most favorable presented, offer hope of *permanent* success—that a chronically congested pulp, a suppurating pulp, a tumefied pulp, a half-destroyed pulp, each and all are extremely doubtful of results—so doubtful that the chances of permanent preservation of such teeth are better by means of extirpation of the pulps than by any treatment at present adopted for their preservation.

The large number of cases of spontaneous death of the pulp *after treatment*, and the damaging effect of such death on the root membrane, should be a serious warning to every operator.

In the mouth of an adult individual, a healthy, vigorous root membrane is of far more importance than an emasculated pulp. To endanger the normal condition of this membrane is a more sure endangering of the tooth than anything that can possibly happen to the pulp which does not necessarily involve the root membrane. How many teeth with

healthy, vigorous pulps, are annually lost by a wasting away of the root membrane alveolar processes! And dentists as yet are able to offer but temporary check, except in a few cases, to the progress of the disease. I would say, then, in all cases avoid a slow spontaneous death of the pulp, if you would avoid a chronic disease of the root membrane.

It may be replied to this that extirpation of the pulp endangers in like manner the root membrane. I am aware of the delicate nature of the operation of extirpation. It is an easy matter to devitalize a pulp, but to extirpate it, is another and wholly different operation. If an operator allows himself simply to devitalize, and not remove wholly the debris from the root canals, he may surely expect trouble in the root membrane. Delicate and difficult as this operation is, in the flattened roots, time and patience in the use of the requisite means will accomplish it, and leave the peridental membrane unharmed. This being the case, we may expect a long continuance of a pulpless tooth in the mouth.

Here we are confronted with the objection that, after the death of the pulp, the root membrane being compelled to perform vicariously the function of the pulp, induces hyperæmia, and at length its own destruction. This objection is a *petitio principii*. It assumes, without proof, the main point at issue. In premise and conclusion, it is false to fact. Vicarious performance of function is in this case anatomically impossible; and as I have shown, I think, in this essay, it is not physiologically required.

If the peridentium is left unharmed by the death of the pulp the performance of its own legitimate functions is alone adequate to sustain the tooth structure in all its oral relations. The hard tissue having gained a sufficient degree of density and hardness to maintain that structure by a law of mineralization independent of the vital functions of the pulp will certainly on the death of the pulp, make no unusual demand on the peridentium for vital support. It no doubt gives its measure of support to dentine of the roots, and also to the dentine of the whole tooth, so long as the nerve plexus

remains intact throughout the whole structure. Performing thus *its now* legitimate functions, it is enough.

In concluding this essay it seems necessary to guard against misapprehension, thoughtless antagonism of ideas, and unwarrantable conclusions; for some gentlemen may rise and say, "if the teachings of this paper be correct, I see no need of the dental pulp; we may as well extirpate the pulps of all the teeth at once, and save mankind from all contingencies of dentalgia and loss of teeth." A foolish objection, indeed! I will, however accept its rational aspect so far as to say that the contingencies alluded to are neither sequences of *healthy* pulps in *sound* teeth. For a similar reason ignorant operators have removed sound and healthy teeth of the first set to encourage the development of the second set. Leave nature to eradicate temporary teeth, and to obliterate pulps in her own time and in her own way. The practical bearing of this paper regards only the treatment of *diseased and dying pulps*.

Another may say, "If teeth arrive at maturity in density and hardness in any specified number of years, then it may be said that the pulp is of no further use. In that case I see no reason why we should not abandon pulp treatment altogether, and extirpate every exposed pulp."

This objection rests on a misapprehension and a misstatement of the teaching of this paper. The conclusion drawn from the decreasing size, decreasing functional power and decreasing resources of the pulp, was that the tooth structure arrives at a period of development fully adequate to every performance of function before middle life; and that therefore the pulp is of little importance in the economy of nature, compared with its importance in earlier life. I do not say of *no* importance. In any case of exposure, with little or no disease of the pulp, it is worth while to attempt to save *this little* of pulp function whenever it can be done with a reasonable degree of certainty. But that there is a period when the hard structure has arrived at such a degree of maturity, that, in case of disease, the *comparative value* of

the pulp is to be considered, will be readily conceded; and with chances of final restoration to healthy function are also to be well considered the natural tendencies to obliteration, and the consequent feeble hold the pulp has on life. The question of *abandoning* treatment, pertains *only* to the class of badly diseased pulps.

Another will say, "I prefer to give the treatment, *in every case*, and take the chances; if death of pulp and abscess follow, let it come. I will then cure the abscess." In the prognosis of a diseased and dying pulp, something else is more worthy to be considered than simple abscess. Abscess induced by a slow ebbing out of the life, and slow wasting of the substance of the pulp, is not of the benign character of an eight-days' abscess, although the latter may inflame and swell with ten-fold more pain and discomfort to the patient than the former. It is the chronically congested condition of the root membrane that attends a slowly-forming abscess, and that so often remains without cure, after the abscess itself is cured, that should excite the alarm of every operator who will willingly run the risk of abscess in the confidence he has in an easy cure.

The preservation of the teeth in their entirety, is conservative dentistry. But when, by inevitable disease, the vitality or functions of two or more kinds of tissues are endangered, it is the part of wisdom to sacrifice that which is of least importance.

The whole thought of this paper has a basis in the comparative value of the pulp at different periods in life, which I have attempted to establish as a physiological fact. Its tendency to gradual obliteration, and its ready death from very slight causes—as from the presence of a small filling in a cavity, that has penetrated not more than half through the dentine—have been brought to your notice to show with what feeble tenacity the pulp holds its vitality, and to show its very limited susceptibility to treatment when diseased. Any modification of practice which may grow out of the view of the subject here presented should be

based more upon the greater probabilities of the continuance of teeth in the mouth till old age, by the careful and skillful extirpation of an emasculated pulp, than upon any treatment popularly resorted to for its preservation.—*Transactions of N. Y. Odont. Society in D. & O. Science Magazine.*

ARTICLE III:

Gold can be so Manipulated as to make Operations Permanent.

BY MARSHALL H. WEBB.

Chalk is carbonate of lime, and there is none of this in any dental tissue; therefore, no tooth can be compared, in any way whatever, to "a little block of chalk." In the *Dental Miscellany* for April, 1878, Dr. C. M. Wright, of Basil, Switzerland, has attempted to make such a comparison, but he has only again demonstrated that he is not fine enough in his perceptions (and cannot, therefore, be accurate enough in his manipulations) to be a good judge and a thorough and skillful operator.

When operations have been so performed as to entirely prevent fluids from entering between the gold and the tissue or tissues, against which it has been built, there is certainly the same action going on in the protoplasmic elements between the enamel prisms, as before, but this process is a fulfillment of a law in the animal economy, and is not to be compared to the simple infiltration of fluid through the wall of a cylinder of non-living vegetable tissue (such as Dr. Wrights' "rattan model" and to the gold which may be placed in it.

Dr. Wright asks, "How long should a filling remain to be considered permanent?" If gold (or any other material) is used as a simple "stopping" it will, in all probability, be only "temporary," but in the hands of properly quali-

fied and skillful operators, it can be so manipulated as to make operations permanent. Permanent signifies "continuing in the same state, or without any change that destroys form or character; remaining unaltered or unremoved; continuance in the same state or place; duration; fixedness." So far as the materials used in the performance of dental operations are concerned, therefore, gold is the only material that can be made to answer all these requirements. Operations can be so performed as to prevent further disintegration of enamel about the parts against which gold has been well impacted and finely finished. Gold can be so manipulated as to aid in the preservation of the teeth so long as the organ or organs operated upon are not attacked by caries in other parts, and until solution and absorption of the alveolar process takes place, and the teeth loosen and fall out, or till the death of the patient, and the remanding back of the elements of the tissues to their primal condition.

We are having no "earthquake," such as Dr. Wright refers to, in America, but there are practitioners who are *Flagging*, and attributing the cause of failure in dental operations to gold as being incompatible with tissue, when in reality the principal cause of failure consists in their incompatibility with their calling.

In such cases as Dr. Wright refers to as coming in for treatment in Switzerland—in very many cases everywhere—function has been interfered with or interrupted, or nutriment has not been sufficiently rich and abundant, and tissues have not been perfected, and it is in just such cases that the most thorough and careful treatment and perfect operations are required. If an operator does not possess the ability to properly perform an operation with gold, it were better for him to insert another material than to extract or cause the loss of the organ. In teeth, where calcification has not fully taken place, and where the interglobular spaces, filled with larger protoplasmic elements, might yet be found, it is of the utmost importance to so perform oper-

ations, when disintegration penetrates the enamel upon a proximate surface of a tooth, as to have the gold built out to the original contour of the missing tissue, and to come closely in contact with that which may be inserted in, or with the normal tissue of, the adjoining tooth. Each such operation should be so performed that the enamel, against which the gold has been built and finely finished, shall be free from contact at every part, and be washed by the saliva.

With proper hygienic management, the tissues of such organs as have just been referred to, will gradually but surely become more fully calcified and perfected, year by year, so that at maturity the acid conditions, concomitant with active carious processes, will be no longer present, to the same extent, and the teeth be of that character not liable to be attacked by destructive agents. Each operator should do all that he possibly can to preserve the pulp in every case presented, and especially in all cases where the tissues of the body have not matured. It is even better to retain a pulp that is in a semi-vital condition than to destroy it while the patient is yet in his or her teens, because, in youth the balance is in favor of supply of pabulum, not only to sustain but to perfect tissues.

It is not only necessary for one to possess the genius of an artist to become a first-class operator, but he must also be an anatomist and histologist; a physiologist and pathologist; an etiologist and a therapist, and be able to intelligently apply remedial agents for the "removal of abnormal functions and abnormal growths, that the physiological energies may hold normal sway in the production and maintenance of the elements of the tissues and organs." It is not of so much importance to "employ gold, amalgam, tin, oxychloride of zinc, gutta-percha and judgment," and to "use gold in cylinders, pellets, strips, balls, ribbons, mats, ropes, blocks," &c., &c. (none of which forms are the best to use,) or to "employ automic and engine mallets, and pretty Swiss girls as vital mallets (f.) hand-pressure and all other well-known

methods" (excepting the very best;) it is far better to consider *how* all these things can best be employed—how operations can best be performed by their aid. There are very many practitioners in almost every part of the world who have "modern charts, stools, dam-appliances, engines, instruments, &c.," and each might be "an earnest and enthusiastic *dentist*," and yet by no means a capable and skillful operator.

Several years ago a thoroughly educated, honest and conscientious practitioner, and first-class operator, was called to give a clinic before the Iowa State Dental Society. He took with him the instruments which he usually employed to perform operations, and after giving a clinic he learned that a practitioner, who was present, had said that it was "easy enough for Dr. Atkinson to perform such an operation with such fine instruments," whereupon the same practitioner was invited to witness a clinic to be given the following day by the same operator. When the time arrived for the performance of the second operation, a simple file was made into an excavator (by the operator) and the cavity was prepared; when this was done, the same point was made into one of a proper shape for inserting the gold, which was all impacted by the aid of this same crude instrument, and a plain hand-mallet or hammer. After this was done, the same end of the file was made into a chisel and, by this means, together with the file-cut surface of the file, the surface of the gold was smoothly finished, and the operation was equal or even superior to the one performed the day previous by the aid of fine instruments. In this case, the success of the operation depended upon the genius of the operator, and not upon the use of appliances.

Dr. Wright states that the "filling of teeth is a very absorbing occupation, but it is not a *fine art*." An operation can be made a work of "*fine art*" if the operator be really an artist. "Our monuments" *do* "express the nobler sentiments of human mind" if the operator has the ability to "express" and the mind have the "nobler sentiments."

Most of the patients of a thoroughly conscientious, capable and skillful operator "really appreciate the work we do" more than the majority of "our craft," because such majority do not know what fine operations are—what "*fine art*" is. Could we but "see ourselves as" this same majority of so-called dentists have led "others" to "see us," there are but comparatively few who would have any enthusiasm, without which key-note real success cannot be attained. While it may require an encouraging word (as in the case of Michael Angelo with his Madonna,) to kindle that inspiration which leads to the production of a work of art, yet all artists obey the behests of genius without taking into the account the mere opinions of others. When we are governed by the "nobler sentiments of the human mind," as other artists are, and do all in our power to perform first-class operations, and make each and every operation a specimen of "*fine art*," then will we deserve and have "brotherhood with the painters and sculptors" (which latter we ought to be,) and also to be the "architects" not only of fine work but of our own "fame" and that of our calling.—*Dental Miscellany.*

ARTICLE IV.

Substance of Lectures on Gold.—Continued.

BY PROF. HODGKIN.

The temperature at which pure gold is rendered fluid is quite high, but easily attained by our ordinary appliances. The mass in the crucible, to which our attention has been called and which we are submitting to the process of "dry refining," will probably fuse at a considerably lower temperature, as the almost universal law is that alloys have a lower melting point than the mean of their constituents. A little above red heat will probably serve to keep fluid the mass we are operating upon.

We bear in mind that our object is to purify the gold from its contaminations, and for that purpose we have reduced the whole mass to a fluid, (molten) condition. Only its surface can be acted upon by the agents used in refining, and so it is necessary to stir it up, using for this purpose the porcelain rod before spoken of.

Reagents are defined usually as agents used to detect the presence of substances. We use the word in a somewhat different or extended sense, as our reagents are used to eliminate from the gold its impurities.

The chemistry of their action is simple. Certain substances are brought into contact with these highly heated metals; the heat decomposes these complex bodies into their ultimate elements; such of these ultimate elements as have affinity for the metals in question unite with them, the others escaping.

To make this a little more full and explicit. The chemicals selected as efficient for our purpose must contain only such elements as will combine with the baser metals, but not with the gold, and they must further contain such elements as will in some way make such a combination with these base metals, as can be removed from the crucible. Several substances may be used for this purpose, possessing these characteristics. The essential feature of all is combination with oxygen or chlorine; the former is most commonly used. Nitrate of Potash (saltpetre) a salt consisting of nitric acid and potassa, is one of the simplest of our reagents, and its action may be easily understood.

The heat decomposes the salt, which is resolved into its ultimate elements, the nitrogen and potassium are volatile and fly off, having no affinity for the metals in whose presence they are liberated. The oxygen in its newly set-free condition is eager in its search for affinities, and greedily takes up with whatever presents itself of an oxydizable form. Oxygen in its *nascent state*, as it is called, or condition of being born, has an energy of combination not seen under other circumstances, and it readily oxydizes the baser

metals, which in their molten condition, are exposed to its action.

Small pieces of saltpetre are thrown into the crucible from time to time and the contents brought into contact with it by stirring, and thus they are changed from the metallic form to that of compounds with oxygen. But we find that the tendency is strong on the part of these oxides to relapse to their metallic state, and recombine or alloy with the metals we are endeavoring to purify. So a second step is necessary—that of fixing them in their newly combined state. For this purpose borax (bi-borate of soda) is useful, as it strongly combines with these oxides of the metals, and form with them a sort of a glass of borax, which compound has no tendency to reduction, and which, floating on the surface of the metals, is easily removed.

Such is the simple process called *Dry Refining*, very old, and only partially satisfactory. It will, if carefully conducted, remove the lower metals, but it leaves in the alloyed mass untouched any silver or platinum which may be present there. For much of our work this is not of importance, as approximate purity will answer for our plates perhaps; and the process is exceedingly useful as a preliminary step to *Wet Refining*, of which we shall come to speak presently.

As adjuncts to this process several modifications are made. I have mentioned *chlorine* as one of the reagents. A stream of this gas injected into the crucible upon the surface of the molten metal, will soften and toughen it. The bi-chloride of mercury (corrosive sublimate,) thrown into the crucible, seems to answer well. Its action is not well understood. A piece of gold unalloyable by reason of impurity, if heated and thrown into dilute muriatic acid, seems to be softened, and rendered more manageable.

To sum up then, the principles involved in refining by the dry process are (1) heat, and (2) oxydation of impurities and removal of these oxides by the use of a flux which combines with these and renders their reduction to the metallic

form difficult. As I have stated, it is proximate only, and no further purity can be expected than that of freedom from oxydizable metals. Those which are not capable of being thus treated, must be removed by what is known as the "wend process," to which I invite your attention.

ARTICLE V.

Virginia State Dental Association.

The regular annual meeting of the Virginia State Dental Association will be held in the City of Richmond on the second Monday in December, 1878.

It is deemed highly important for the interest of the profession throughout the State, that this meeting should be as full as possible.

A cordial invitation is hereby extended, not only to the members of the society, but to all members of the profession, whether residing in this or other States, to meet with us.

Those residing in this State, and not members of the Society, are urgently invited to come and unite with us, thus lending their aid in carrying forward the enterprises which have for their end the good and welfare of the whole profession.

The members of the regular standing committees are earnestly urged to prepare as full and complete reports as possible, experience having shown that the more faithfully the committees perform the duties assigned them, the more interesting and useful our meetings are made.

The duties of the Standing Committees are set forth in the following articles of the Constitution :

ARTICLE I.

SEC. 1. It shall be the duty of each member of a committee to make an individual report, so far as such report *can* be made, and in case of inability to be present at the meeting at which such report is due, to forward it to the Recor

ding Secretary, from whom it may be obtained by the Chairman of each Committee respectively at the time of the assembling of the Association.

SEC. 2. Each committee shall report, if practicable, the results of *original* investigations in their several departments, and also such *new* matter collected from all sources at their command as may be of interest and profit to the Association.

SEC. 3. The Committee on Operative and Mechanical Dentistry shall thoroughly test and report upon all *new* models and materials, and upon their physical properties, stating clearly *why* any particular material or mode of practice should claim attention, and giving tabulated lists of successes and failures, so far as may be attainable.

The resident Executive Committee is charged with the duty of providing entertainments for non-resident members, and visitors during their stay in the city, and from the well known energy and enterprise of the gentlemen composing that committee, we have good reason to believe that their portion of the programme will be carried out to the satisfaction of all.

REGULAR STANDING COMMITTEES FOR THE YEAR 1878.

Committee on Publication.—Dr. L. M. Cowardin, Richmond; Dr. G. Smith, Louisa C. H.; Dr. D. B. Garden, Farmville.

Committee on Operative Dentistry.—Dr. S. H. Henkel, Staunton; Dr. John W. Scribner, Charlottesville; Dr. Wm. Farmer, Wytheville.

Committee on Mechanical Dentistry.—Dr. G. A. Sprinkle, Culpeper C. H.; Prof. J. B. Hodgkin, Washington D. C.; Dr. W. E. Norris, Charlottesville.

Committee on Dental Education and Literature.—Dr. George H. Chewning, Fredericksburg; Dr. Frank L. Harris, Staunton; Dr. S. G. Cowardin, Richmond.

Committee on Dental Pathology.—Dr. N. M. Burkholder, Harrisonburg; Dr. Jud. B. Wood, Richmond; Dr. Jas. F. Thompson, Fredericksburg.

Committee on Physiology, Histology, Microscopy and Chemistry.—Dr. W. W. H. Thackston, Farmville; Dr.

James Johnston, Staunton ; Dr. Frank A. Jeter, Richmond.

Committee on Dental Appliances.—Dr. W. Leigh Burton, Richmond ; Dr. J. O. Hodgkin, Warrenton ; Dr. R. Y. Henly, King & Queen.

Executive Committee.—Dr. Jud. B. Wood, Dr. Frank A. Jeter, Dr. Frank L. Harris.

J. HALL MOORE, *President.*

L. M. COWARDIN, *Cor. Secretary.*

ARTICLE VI.

Results of Some Recent Experiments.

The more gold there is in a dental alloy, the more oxide of tin will be found at the moment of mixing with mercury.

The black color which stains the hand in mixing an alloy with mercury, is an oxide of tin, almost wholly.

The quickest setting and strongest dental alloys are those made according to their *Chemical equivalents*; and the best amalgam is made by adding mercury according to its chemical equivalent. For instance, the uniting proportion of gold is 197 ; silver 108 ; tin, 58.

Now we can melt together, by weight, 197 parts of gold with 108 parts of silver and 58 parts of tin, or we can use any multiple of these numbers. For instance, we may take 197 parts of gold, which is *one equivalent* of gold ; and 116 parts of tin, which is two equivalents of tin ; and 216 parts of silver, which is two equivalents of silver, and melt them together. In other words, we may take one or more equivalents of either of these metals and melt them with any other whole equivalents of the metals mentioned. Suppose we make a dental alloy of gold 1, silver 3, tin 6, not by weight but by *chemical equivalents*, then we must amalgamate it with mercury 4, or four equivalents of mercury. The formula of the resulting amalgam would be as follows, according to weight:

Gold, 197.

Silver, 324.

Tin, 348.

Mercury, 400.

Now, it will be found in practice that this quantity of mercury is exactly the best quantity to use. This would be to 100 parts of filling, 46 parts, by weight, of mercury. If more mercury is used, all excess would be retained in the amalgam mechanically, and not united chemically with the other metals. Consequently, it is liable to leave the plug by slow evaporation.

When I have melted silver and tin together in the usual proportions of dental alloy, say 4 parts (by weight) of silver to 5 parts of tin, I find the ingot uneven in texture and metallic composition. Some portions contain more silver or more tin than another portion. This I attribute to those portions having no partners with which to unite. Say I take 432 silver, by weight, which is exactly 4 chemical equivalents of silver, and melt with it 540 parts, by weight, of tin. This is, then, the usual formula made of 4 silver, 5 tin. Let us see now if the tin is in exact chemical proportions. As the chemical equivalent of tin is 58, we can find how many *equivalents* of tin there are in the 540 parts by dividing that number by 58. We find there are nine chemical equivalents of tin and 18.58 over. Now, as these molecules of tin have no molecules of silver to unite with, they are merely retained in the ingot mechanically. If we made a formula 4.5 silver, 5.5 tin, then there would be an excess of only 6.58 of tin.

Suppose an alloy containing this excess is amalgamated for a dental plug; then we have two kinds of amalgam in the same plug, one of silver and tin *chemically united*, and one of the surplus tin alone. The effect of this, *practically*, is to make the plug less tenacious or strong.

One formula of a gold alloy which I published as being good, was composed by weight of gold 1, tin 1, silver 1. Let us see now how this corresponds to the chemical proportions necessary to make a chemical formula.

Gold 197, 1 chem. equiv.

Silver 197, 1, 89-108 chem. equiv.

Tin 197, 3, 23-58 chem. equiv.

In this alloy, then, there were 89 equivalents of silver and 23 of tin that could not unite with gold, but a large portion of the remaining tin united with the whole of the silver, leaving a small surplus of tin to unite only with the mercury in amalgamation. Now here are three kinds of amalgams in the same plug; and we have more mechanical mixture than in the silver and tin alloy, and consequently a less strong plug. Still we have a plug that does not contract in hardening. Therefore, it makes a water-tight plug.

There are some alloys that do not contract when made according to chemical proportions. But all formulas in chemical proportions may not result so. An alloy thus made is much harder and stronger when thus made than one not so. It is very lately that I have found this out.—*Dr. Chase, in Dental Quarterly.*

Georgia State Dental Society.

The Tenth Annual Session of the Georgia State Dental Society was held in the City of Atlanta, commencing on the 29th of July, 1878, 10 A. M., President, M. H. Thomas in the chair. The State Board of Dental Examiners met at the same time and place, and accomplished a very effective work, for the good of the profession throughout the State.

After an unusually interesting session of three days, the Society elected the following officers for the ensuing year, and adjourned to the Second Monday in July, 1879, at Augusta, Ga.

President.—Dr. W. C. Wardlaw, Augusta.

1st Vice President.—Dr. M. S. Johnson, Perry, Ga.

2nd Vice President.—Dr. J. A. Chapple, LaGrange, Ga.

Cor. Secretary.—Dr. L. D. Carpenter, Atlanta, Ga.

Rec. Secretary.—Dr. R. A. Holliday, Atlanta, Ga.

Treasurer.—Dr. H. A. Lowrance, Athens, Ga.

Committee of Arrangements.—Drs. George Paterson, Waynesboro; G. H. Winkler, Augusta, Ga; Samuel Hape, Atlanta, Ga.

L. D. CARPENTER, *Cor. Secretary.*

As the Southern Dental Association commences its Annual Session on the following day, the Second Tuesday in July, the members of the Georgia Society will have an opportunity to attend the meetings of the Association likewise.
—EDITORS AMER. JOUR. OF DENTAL SCIENCE.

EDITORIAL, ETC.

"I desire to attend lectures at your Dental College this winter, and write to know concerning the terms, requirements &c." And this correspondent goes on to relate how long his pupilage has been, the standing, &c., of his preceptor, the qualifications of hand he (the student) is thought to possess; and wishes to know if he cannot "graduate in one session," as he hears others have done.

It is not hard to decide what answer to make this student, less difficult perhaps than if he had sought a personal interview. His letter betrays that however well trained he may be in the routine of office practice, his mental training and general education is sadly deficient, so deficient indeed as to make it sure that if he were in any school it should be one in which the more common English branches are taught. He is anxious to obtain a diploma which should entitle him to entrance into the best society, and which places him in competition, in the location he will probably select as an eligible field, with polished and cultivated men, whose peers in society he cannot hope to be, except through years of the closest study and application. As well might an ignorant and coarse country bumpkin, marry a refined and elegant lady and expect to feel comfortable and re-

fleet credit upon her choice, as for a man with not sufficient mental training to qualify him for creditable comparison with dentists, expect to do well in the race with those thus equipped.

But do Dental Colleges insist upon certain previous qualifications and preparation on the part of those applying for tickets? asks one to whom this letter of enquiry is shown. No certain standard can be set which would be perfectly just, we answer, for obvious reasons. But that *some* requirements of the sort should be possessed, is evident, for the protection not only of a noble and elevated profession which should not be hampered by the ignorant any more than by the pretender, but for the protection of the teachers themselves. Those holding professorships in Dental Colleges do not undertake, nor could it be expected of them, to teach the plainer English branches, (the older provision that the student should possess some familiarity with Latin and Greek seems obsolete now;) and if students cannot understand the ordinary verbiage of the lecturer, simplified as he strives to make it, it is only just to the teacher that the student should possess the preliminary training which would place him on a plane with the teacher's language. It is a matter of common remark among students that the lecturer overshoots his hearers. This is not because the former is abstruse, but because the latter are ignorant of the medium of communication between them and the speaker.

It is due the profession, the schools, and the student himself for his own protection, that he should know something—the more the better,—something which will entitle him to the respect of his associates and the public; that he should at least know enough to comprehend the ordinary speech of the lecturer, and to some extent be a master of the technicalities of ordinary scientific language; that the lecturer should not be required to lay these foundations for him, and that he represent creditably in society the honorable profession of which he is a member. Less than this should not in fairness be expected of a man who is to deal with his humanly organized fellow-beings in one of the most perplexing and pains-taking, as well as sympathetic of callings.

So much for the thought that arises from a perusal of his letter, which is respectful in its tone, and displays an ardent de-

sire to be something. And so impressed are we with this that we write to him, to the effect that, while we fear he is not in a sufficiently advanced position to make the most of a course of lectures, yet he had best have a personal interview with some one connected with the college, that he may show as well what he does know, as his letter betrays his want of knowledge. The result of this interview shows that his preceptor, though a man standing high in his profession, with a large practice, has had such ill-defined notions of the relations between himself and his pupil, as to limit his teaching to the ordinary details of laboratory work, with only an occasional opportunity on the part of the student to see operations, and with no attempt whatever to lay broad and deep the foundations on which the scientific study of dentistry must stand. The study of chemistry, of anatomy, of physiology &c., has not only not been attempted, but their necessity not even suggested; the main idea inculcated being that the dentist should be a man of *work*, not thought, and that the mechanism of the profession is its all—a *practical* profession.

We can only advise this young man. The schools are open, and he has a right to enter. But that such students beset the path of the teacher with perplexing difficulties is evident indeed. Lectures must be simplified for him and technicalities avoided, and the course of study for those who are better qualified made trite and commonplace.

Where is the fault? With the Colleges? Hardly. With the Student? No. With the Preceptor? Undoubtedly.

H.

The New Rubber Suit—We are informed by Dr. R. Finley Hunt, is progressing well, and presents a satisfactory appearance so far. The case will be in the regular course before the Courts at Washington, in October next. The main points on which the Cummings' Patent seems to rest its validity are controverted in this new case, and apparently successfully. It is hoped that the matter can be now speedily brought to a final issue. One of the most hopeful signs of the case is, that the Bacon people wish to postpone a hearing of it.

H.

MONTHLY SUMMARY.

Nature and Treatment of Neuralgia.—Dr. James B. Baird, of Atlanta, Georgia, in a paper on this subject, read before the Georgia Medical Association, sets forth the following conclusions:

1. Neuralgia, literally considered, is not a disease, but a symptom of some unknown pathological state of a sensory nervous trunk, fibre or filament.

2. It is characterized by attacks of pain of greater or less intensity, frequency and duration.

3. The pain is paroxysmal, being marked by more or less complete and protracted remissions or intermissions.

4. The causes of neuralgia are numerous, but the most frequent cause, in the opinion of the writer, in this country, at least, is malaria.

5. Its essential pathological nature is unknown.

6. The diagnosis as to the existence of the affection is ordinarily sufficiently easy, though the attempt to trace its origin, is frequently attended with much difficulty.

7. The prognosis depends upon the cause and our ability to remove it by the means of treatment at our disposal.

8. The treatment should be constitutional and local.

9. The general treatment should be directed, as far as our knowledge or suspicions will warrant, against the cause of the attack. It should be persevered in with a view of removing any supposed taint or infection that may exist, and of augmenting the powers of the system.

10. Apart from any constitutional therapeutic indications, electricity and morphia hypodermically are the most reliable remedies that we possess.

11. Galvanism is by far the most efficient form in which electricity can be administered.

12. To secure the best attainable results, galvanization must be used intelligently, and, in many cases, perseveringly.—*Pacific Medical and Surgical Journal*.

Chloral Hydrate Locally Applied in Tetanus.—Dr. Bigelow reports, in the *Practitioner*, a case of tetanus caused by a rusty nail penetrating the foot, which was relieved in less than twenty minutes by introducing a drachm of chloral hydrate into the wound, after it had been enlarged by incision.—*Canada Lancet*.

Treatment of Wounds.—The most simple application for sealing up wounds is the old-fashioned tincture of benzoin, and it is the most successful. By it nearly all flesh wounds heal rapidly, while they do not do so under watery and fatty dressings. Tincture of benzoin has a remarkable property of uniting tissues and combining with blood. It is antiseptic, and assisted by cotton-wool pads of lint and firm bandaging, will arrest hemorrhage from all vessels less in size than the radial artery. Non-recent wounds which suppurate it is not desirable to heal by adhesion. The most important item in the treatment of these is ventilation with as pure air as possible. None but the most evil results follow the application of waterproof materials such as oiled silk and gutta percha tissue over the dressings. Such wounds invariably stink and slough; the wound is made unduly hot, products of decomposition are retained, the surface has a grayish, grumous aspect and loses substance daily. A simple piece of lint or muslin covered by cerate, or dipped in lotions of Condy's fluid (1 to 40), or tincture of myrrh and water (1 to 20), spirit and water or weak carbolic acid lotion (1 to 60), with just a layer of bandage to retain the dressing in its place, is all that is necessary, save a daily syringing and washing with warm Condy's fluid and water. (Mr. Phillip Cowen, p. 124.)—*Braithwaite's Retrospect of Practical Med. and Surg.*

Hypodermic Injections of Chloroform.—These injections have been highly recommended by eminent physicians as a substitute for morphia. It is claimed that they are painless, that they relieve pain rapidly and for several hours, and that they are entirely innocuous, being followed by neither local nor general symptoms. Dr. Jochheim, of Darmstadt, however, reports a case in which the injection of only ten drops of chloroform, which is only one half what is frequently administered, was followed by severe local disturbances. Five hours after the injection a violent local inflammation set in, and in twenty-four hours a hard, black slough had formed which was not cast off by supuration until six weeks afterwards.—*Allg. Med. Cent. Zeit.*

Sulphate of Quinine.—A property of Sulphate of Quinine not well known.—This property consists in the modification it causes on suppurating surfaces when it is applied locally. The injection of a solution of 60 centigrammes of sulphate of quinine in 60 to 100 grammes of distilled water is very advantageous in the treatment of empyema. The same injection is efficacious in gonorrhœa, and an ointment of sulphate of quinine exercises a cicatrizing action on wounds and chronic ulcers. The injections of quinine have the same action on suppurating cavities and fistulous tracts.—*Gazetta Medica Italiana.*

A Rival to Carbolic Acid.—Prof. Volkmann, of Halle, who has achieved such brilliant results with the use of Lister's method in surgery, has adopted the new antiseptic, thymol, in his clinics. His assistant, Dr. Ranke, reports fifty-nine operations in which the thymol was used in place of carbolic acid, with strikingly good results. These operations included several amputations—of the leg, arm, breast, and foot; four excisions of the elbow; a gunshot wound of the knee-joint; a secondary amputation of the thigh; an excision of the hip, one of the shoulder, etc. The results obtained thus far in the major operations show that, under thymol, the secretion is much less and the rate of healing much quicker than when carbolic acid is used. Thymol has the advantage of being innocuous and non-irritant, and of not causing the least anæsthesia of the skin. The solution used consisted of thymol 1 gramme, alcohol 10, glycerine 20, and water 1,000 grammes. The much greater expense of thymol is counter-balanced, Dr Ranke maintains, by the smaller quantity required and the few bandages needed.—*New York Medical Journal*.

Salicylic Acid and Borax.—It may be interesting and perhaps useful for some readers of the *Journal* to know that while a solution containing ten grains of salicylic acid and ten grains of borax in one ounce of water has a very bitter taste and an acid reaction, a solution containing ten grains of salicylic acid and fifteen grains of borax has no disagreeable taste, and is nearly neutral. This solution appears to possess all the valuable properties of salicylic acid, and forms an agreeable means of using the acid internally or as a gargle.—*London Pharm. Jour.*

Abscess of Lower Lip Attributed to Poisoning by Paris Green.—Dr. R. Wilson, of Washington County, N. Y., writes us: The ravages of the potato bugs in this section have caused the farmers to use an immense quantity of Paris Green, to destroy them. About a week since a young man, by the name of Albert Calkins, picked an apple from the ground, where it lay among potato vines upon which "Paris green" had been used, and ate it, or rather sucked the juice. Shortly his lower lip began to inflame, and after acute suffering an abscess formed, which, on being opened, discharged a large amount of pus. Abscess of the lip is not, I believe, of common occurrence.

Paris Green is said to be a compound of arsenic and copper. Of Scheele's Green, Dr. Taylor says that it produced, in a watchmaker, "swelling and ulceration of the lips."—*Med. and Surg. Reporter*.

Antiseptic Solution of Benzoic Acid.—A handy preparation for dressing and disinfecting wounds, suggested by the experiments of Professor Salkowski, of Berlin, on the strongly antiseptic properties of benzoic acid, has been found very valuable and pleasant for its deodorizing effects in practice on shipboard by Dr. Senftleben. It is a solution of half an ounce of pure *acidum benzoicum e resina* in ten ounces of rectified spirit. This preparation may be used like the alcohol phenique of the French, but is of far more agreeable smell and taste. It may be mixed with water for making lotions, gargles, mixtures, and will probably be found very effectual in naval and military practice. It may also become an article of the toilet; for, like salicylic acid, benzoic acid is innocuous, but its antiseptic action is by some considered to be stronger, and it volatilizes practically almost as readily as carbolic acid, but with a very different odor.—*Pharm. Journal.*

On the Combined Use of Chloroform and Morphia.—Professor Koenig, in a communication to the *Centralblatt fur Chirurgia*, (No. 39, 1877,) says he has combined the hypodermic administration of morphia with that of chloroform in a large number of cases, with very favorable results. It is seldom necessary to give more than one or at most two centigrammes [one-sixth to one-third grain.]

The indications for the use of morphia during chloroform-narcosis are twofold: 1. Motor disturbances occurring before or during chloroform-inhalation unless these are very transitory: 2. Operations of such a nature that the chloroform-narcosis cannot be maintained throughout, and especially towards the end. Among the latter may be particularly mentioned operations upon the eye, plastic operations, extirpation of tumours from the soft parts of the face. The object of using morphia is to induce analgesia over and above the chloroform-narcosis, and also that this narcosis should not be pushed so far. As regards any danger which may be connected with the combination of narcotics, Koenig esteems this lightly. He says that out of seven thousand cases in which he has used chloroform, none have died from it, and many of these took morphia also.

The Prevention of Chloroform Narcosis.—In the *Vierteljahrsschrift fur Gericht. Med.* Dr. Wachsmuth, of Berlin, makes the important statement that if one-fifth, part of oil of turpentine is added to chloroform, the latter can be administered to the fullest anæsthesia without the slightest risk, as the turpentine prevents, by its stimulating properties, the pulmonic paralysis, which is the proximate cause of death in fatal chloroform narcosis.—*Med. and Surg. Reporter.*

Abortive Treatment of Furunculus.—Dr. Lieven observed at the Petersburg Medical Society [*Petersburg Med. Woch.*, Dec. 29] that all modes of treatment hitherto tried [such as early incision, cauterizing, and cold or warm applications] have failed to arrest the further development of furunculus that has once commenced. The following procedure, however, brings it to a stand: A burning, pricking, itching, suddenly occurring in a normal portion of the skin, announces the commencement of the development of the furunculus, and on the same day a small and quite superficial induration can be felt at the spot. If the skin be now superficially scraped with a small knife, so that a drop or two of blood may be pressed through the epidermis, no furunculus will be developed. This result would seem to show that the affection originates in the uppermost layer of the corium, and perhaps in the capillaries of the papillæ and not, as hitherto received, in the subcutaneous connective tissue, with succeeding necrosis of the corium and epidermis. Disturbance of the digestive organs [frequently diarrhoea] always precedes or accompanies furunculus; but a plethoric or decrepid constitution is no necessary condition, as it may occur in one that is quite normal.—*Med. Times and Gazette.*

A New, Cheap and Self-Generating Disinfectant.—Under this title Dr. John Day, of Geelong, Australia, recommends for use in civil and military hospitals, and also for the purpose of destroying the poison-germs of small-pox, scarlet fever, and other infectious diseases, a disinfectant ingeniously composed of one part of rectified oil of turpentine and seven parts of benzine, with the addition of five drops of oil of verbena to each ounce. Its purifying and disinfecting properties are due to the powder which is possessed by each of its ingredients of absorbing atmospheric oxygen and converting it into peroxide of hydrogen—a highly active oxidizing agent and very similar in its nature to ozone. Articles of clothing, furniture, wall-paper, carpeting, books, newspapers, letters, etc., may be perfectly saturated with it without receiving the slightest injury; and when it has been once freely applied to any rough or porous surface, its action will be persistent for an almost indefinite period. This may, at any time, be readily shown by pouring a few drops of a solution of iodine of potassium over the material which has been disinfected, when the peroxide of hydrogen, which is being continually generated within it, will quickly liberate the iodine from its combination with the potassium and give rise to dark brown stains. It may be applied with a brush or a sponge, or, if more convenient, as the case with certain articles, such as books, newspapers and letters, it may be simply poured over them until they are well soaked; they may then be allowed to dry either in a warm room or in the open air.—*Brit. Med. Jour.*

Howard's Method of Artificial Respiration.—Dr. Benjamin Howard, U. S. A., has been attracting considerable attention in London by his demonstration of his method of artificial respiration. As some years have passed since it was first laid before the profession, we give anew the process he recommends :—

In order to dispose of the accumulations in the stomach or chest, the patient, stripped to the waist, is turned face downward, and a firm bolster being placed beneath the epigastrium, makes that the highest and the mouth the lowest point. Pressure being made on the back the object is accomplished by both ejection and drainage. The patient is quickly turned upon his back, the bolster placed beneath it, making again the epigastrium and the anterior margins of the costal cartilages the highest points of the body, the hips, shoulders, and occiput barely resting on the ground. The patient's wrists are seized, and, the utmost possible extension being secured with them crossed behind his head, they are pinned to the ground with the left hand, so as to maintain it. With the right thumb and forefinger, armed with the corner of a dry handkerchief, the tip of the tongue is withdrawn and held out of the extreme right corner of the mouth. [The wrists and tongue may be confined to any aid.] In this position two-thirds of the entrance to the mouth is free. The epiglottis, by this backward curvature of the neck, is precluded from pressure by undue flexion. The head is dependent, the free margins of the costal cartilages are as prominent as they can be made. The epigastrium being the highest point, the diaphragm is neither embarrassed from pressure above or from below. To produce respiration the operator kneels astride the patient's hips and rests the ball of each thumb upon the corresponding costochondroid ligaments, the fingers falling naturally into the lower intercostal spaces. Resting his elbows against his sides, and using his knees as a pivot, the operator throws the whole weight of his body slowly and steadily forward, until his mouth nearly touches the mouth of the patient, and while one might slowly count one, two, three; then, suddenly, by a final push, he springs back to his first position on his knees, remaining there while one might slowly count one, two; then repeat, and so on about eight or ten times a minute. The resiliency of the ribs insures an instant rebound to the point of departure. The operation can be practiced by anybody, anywhere, before or after division of the funis; in a bath, bed or boat; and friction, electricity, insufflation, or tracheotomy could be practiced simultaneously, without inconvenience.—*Med. and Surg. Reporter.*

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ARTICLE I.

Hard Rubber Appliances for Congenital Cleft Palate.

BY THOMAS BRIAN GUNNING, D. D. S., M. D.

Alexander Petronius, in his work entitled "De Margo Gallico," and Ambrose Pare, in his book on surgery, prove that efforts to relieve those suffering from defective palate, by applying obturators, were made over three centuries ago, and the records of the last fifty years alone show that the endeavors to supplement the congenital cleft palate have resulted in the invention of mechanical appliances which in number and variety are very remarkable; yet the "Report of the International Exhibition of 1876," in referring to the one now submitted, says: "This contrivance is a very marked improvement over all previous appliances to this distressing malformation." Now, that this simple remedy was not devised earlier is owing to mistaken views as to the movement of the muscles of the pharynx and palate, both in perfect and malformed conditions, and this, notwithstanding the investigation and study

of these parts by the most distinguished physiologists and surgeons.

These mistakes will be pointed out in this paper, but the literature of this malformation is already so full, especially with the recent volume on "Harelip and Cleft Palate" by Mr. Francis Mason, F. R. C. S., that it is not necessary to notice all varieties of congenital cleft palate, nor need attention be given to the causes of this incomplete development in foetal structure.

Normal conditions will be considered first.

The *constrictor muscles* of the pharynx are said to be *inserted* into the posterior median raphe, which lies against the vertebral column, whereas they *arise* on that line; that is, they are fixed at this centre of the back of the pharynx, by which the inferior and middle constrictors, in deglutition, *relax* to allow the larynx and its support—the hyoid bone—to pass forward and open the way to the oesophagus.

The *superior constrictors*, which may be seen from the front of the mouth, after reaching the upper end of the raphe, are also prolonged by a fibrous aponeurosis to the basilar process of the occipital bone. They are thus firmly held up as well as back. These muscles, which form the upper part of the pharynx, pass off on each side to their insertions on the *pterygo-maxillary* ligament, etc. They thus inclose the tonsils, and the insertions of the muscles which arch down from the uvula.

The *superior constrictor* muscles, while thus firmly held at the back of the pharynx, and also at their terminations in front, where they join the attachment of the buccinators, which they resemble, are quite important, for they contract the fauces laterally and draw the tonsils and neighboring parts in, or let them out, as necessary.

The hard palate gives support along its back margin to the velum or soft palate, which is seen curving downward and ending at the uvula, which gives insertion to a pair of small muscles—the *azygos uvulae*—which arise on the spine of the palate bone, and pass along the front of the velum.

The *levator palati* muscle comes forward and inward on each side over the concave border of the *superior constrictor* muscle, and spreads out in the upper surface of the velum, back of the aponeurosis of the *tensor palati*, which last comes down around the hamular process, and spreads out its aponeurosis to the centre of the velum and to the palate bone. The *tensores palati* make the velum tense: the *levatores palati* pull it up and back to shut off the nose, and the *azygos uvulæ* muscles antagonize them.

The uvula is also the centre of two distinct arches, formed by two pairs of muscles, which are separated below by the tonsils. The anterior arch is formed by the *palato-glossi* muscles, which are inserted into the sides of the tongue. The posterior arch is formed by the *palato-pharyngei* muscles, which go down, one on each side, their anterior fibres being inserted into the thyroid cartilage, while others pass around the sides and back of the pharynx.

In deglutition the pillars of this arch swing around upon the surface of the *superior constrictors* with great rapidity, and come together behind, the *tensores palati* muscles and *palato-glossi* acting in concert to form the arched band which shuts down against the tongue to keep the food back. The *palato-pharyngei* then act in concert with the *azygos uvulæ*, to press the food down the pharynx.

The *palato-pharyngei* are not associated with the *palato-glossi* in constricting the isthmus of the fauces, nor does the *superior constrictor* act in deglutition, as supposed, its attachments making it impossible that it can press the food down the pharynx.

The form of the hard palate is such that the tongue can fit it around the inside of the teeth, as in the consonant *t*. The back of the tongue also fits against the soft palate and uvula exactly, and this closure can be maintained while the upper part of the soft palate shuts off the posterior nares. This is easily tested by pronouncing the consonant *k*, in which both the nose and mouth are shut off from the larynx,

until the tongue leaves the palate to allow the vowel sound to come out, when only the passage to the nose is kept shut. This double closure is made even in *kee*, in which sound the contact for *k* is on the hard palate, instead of being back on the soft palate as in *koo*. The point of the tongue goes up in *t*, the back of the tongue in *k*, and the lower lip also goes up to form *p*, the upper lip and the hard palate being passive, and the soft palate nearly so, outside of its great function in respect to voice, which is to shut off the nose cavity in all sounds of speech and song except those containing *m* or *n*. At rest, the velum leaves the passage from the nose to the larynx open.

The malformed palate will now be spoken of.

Congenital cleft may be limited to the uvula, or to the front of the hard palate, or it may occupy any part of or extend through both soft and hard palate, involving the front teeth and alveolar process up into the nostrils. In nearly all cases the soft palate is seen on each side. The back of the pharynx is exposed, and appears comparatively wide and flat, although each corner holds a vertical column of tissue, which in deglutition pass rapidly toward the centre of the pharynx along the surface of the constrictors, which are seen to draw strongly across; while the horizontal remnants of the soft palate at the same time narrow the mesial gap. These vertical columns are the posterior pillars of the soft palate, which being ununited are drawn up by the *levator palati* of each side; but the anterior fibres of these pillars, which go to the thyroid cartilage, are seen in place against the tonsils. Each half of the uvula is drawn slightly up by a slip which comes from the *levator*, but it draws very feebly upward, the parts, except in deglutition, tending toward the sides more than up and back. Mr. Fergusson's report of a dissection, made by him, of a cleft palate in 1844, states distinctly that the *superior constrictor* was very full, and he also claimed for the muscle very decided forward action in deglutition; and his statement has hitherto been accepted almost without question.

The back of the pharynx is, however, in full view when the soft palate is cleft, and more especially so when the opening extends through the hard palate, but I have never seen any special action in the *superior constrictor*, beyond that shown in normal conditions. In 1864 I had become convinced that the *superior constrictor* was incapable of any action which could prevent the use of a rigid appliance to supplement the cleft soft palate, and to the present time in no case has the hard-rubber palate failed to keep its place, to give entire satisfaction, and to improve the speech in a remarkable degree.

It is but justice to note that, judging from Mr. Mason's able work already referred to (p. 93,) Sir William Ferguson's riper experience led to conclusions respecting the *superior constrictor* which are in accord with my own views, rather than with those expressed in his report of 1844.

Therefore, in brief, in view of the foregoing propositions: There being no forward action whatever of the superior constrictor muscles, a rigid plate can be worn without intermission, not only in comfort, but with improved condition of the mucous membrane, which is covered in, and of the general health, the nose being as free for breathing as in a normal condition of the parts; while the plate also enables the wearer to utilize the muscles of the cleft velum. The palate is easily made, and being of hard rubber does not deteriorate in the mouth. It is not supported by any part of the cleft, and may thus be worn from early childhood without injury to the parts, in fact its support may even lessen the cleft.

The plate, which is held up by the teeth against the hard roof of the mouth, extends up into the cleft and thence to the back of the pharynx near the tubercle of the atlas, the end being rounded to allow the sides of the pharynx to close in during the act of swallowing. This extension into the cleft being spread out over the soft parts of each side, the united muscles draw up against it and close off the nasal cavity. The vowel sounds are therefore preserved from the resonance of the nose by the natural action of the muscles,

while the nasal sounds are used when necessary, and the tongue is able to form all the lingual consonants, the stiffness of the hard rubber affording the best possible substitute for the muscular firmness of the natural soft palate. To apply this palate, a simple impression of the hard palate and teeth, as is usually taken for the setting of artificial teeth, is quite sufficient, the extension into the soft palate being made by fitting the gutta-percha pattern to the parts without subjecting the patient to the annoyance of obtaining a plaster impression of these sensitive and mobile organs. This palate is consequently so simple that any accomplished dentist can apply it, and the patient is therefore comparatively independent.

Early use of this artificial palate prevents unnatural action of the tongue, such as attempts to close the cleft with the tongue when the latter should be free to act in articulation, whether in speaking or singing.

Fig. 1 gives the upper side view of an appliance for a case in which the cleft passes through the whole length of the soft palate, but does not reach the front teeth.

FIG. 1.

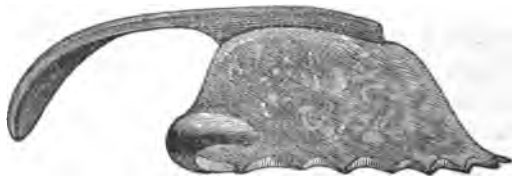


Fig. 2. gives the lower front view of the plate shown in Fig. 1 ; when worn, the narrow part is covered on each side by the cleft soft palate, as in Fig. 4.

FIG. 2.



Fig. 3 was taken from the cast of a large cleft through both the hard and soft palate, in a patient twenty years old.

FIG. 3



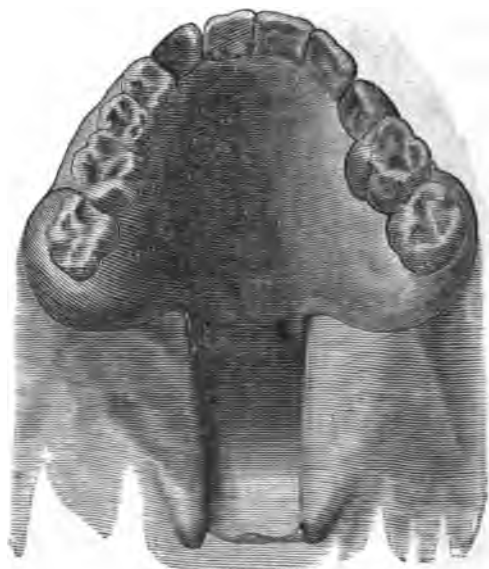
The cleft in her lip had been closed in infancy ; and attempts were made to close the soft palate after the cast was taken, but the parts did not unite. The case is peculiar in the absence of the bicuspid teeth and the *central* incisor, there being only an irregularly-formed tooth on the mesial side of the canine instead of two incisors.

Fig. 4 shows the hard rubber appliance as adjusted to remedy the deformity exhibited in Fig. 3, after the wisdom-teeth and the right central had been lost through decay and the malformed tooth removed.

The cut was made from an impression of the plate *in situ* after it had been worn more than four years, day and night.

Deglutition is not interfered with by cleft of the palate in adults so much as articulation or speech. It was, however, necessary to explain the movements in the pharynx and soft palate in swallowing, in order to prove that they do not interfere with a rigid but properly-fitted appliance. Having shown that the constrictor muscles do not close upon the food, but that they relax to let the hyoid bone and

FIG. 4.



larynx go forward, and as these views are opposed to what is laid down, it is proper to show how the food gets into the stomach.

Liquids especially are drawn into the pharynx by suction, and also pressed back by the tongue; for solid food the pressure is proportionately increased. When the food has passed into the upper part of the pharynx, it is shut in by a band or welt, consisting of the forward portion of the soft palate, continued down the sides, by the anterior pillars. The upper portion is formed by the action of the *tensores palati* muscles drawing their aponeuroses tight, and the *palato-glossi* coming into action, and continuing the curve down on each side of the tongue, at the same time assisting to draw the latter up against this arched band, or welt, by which the food is kept back.

It should be understood that the upper part of this welt is formed by the aponeuroses, at some distance in *front* of the *uvula*, so that the part of the soft palate behind the welt is left free. Through the middle of this, the *azygos uvulæ* muscles pass to the uvula in the center of the back border or arch formed by the *palato-pharyngeus* curving down on each side, and known as the posterior pillars of the soft palate. These two pairs of muscles are now inactive, as the *levator palati* have drawn the soft palate up behind, and closed the passage to the posterior nares, while the food is shut in at the front, as before described. At the instant this is accomplished the *palato-pharyngei* act, and come together behind; the *levator palati* relax, and the *azygos uvulæ* muscles come strongly into action, and draw the uvula and the origins of the *palato-pharyngei* rapidly forward.

The *azygos uvulæ* muscles, which pass from the spine of the hard palate to the uvula. are at this time held *down* to the tongue by the welt or band formed by the aponeuroses before mentioned, consequently they now in acting draw the origins of the *palato-pharyngei* forward, and down to the tongue; and as the insertions of these muscles extend down

around the sides and back of the pharynx (crossing each other behind,) they, in acting at this time, form a circular layer of muscular fibres, which converge from the circumference of the sides, and back of the pharynx, across to the insertion of the *azygos uvulæ* muscles. At this moment the muscles which arise on the inside of the chin draw the hyoid bone forcibly, the back part of the tongue is carried forward, and closes down over the epiglottis until the food falls into œsophagus, the downward progress of the food being facilitated by the pressure of the atmosphere, which is let in by the drawing of the *azygos uvulæ* and the relaxation of the *levator palati* muscles, while the muscles of the trunk co-operate, and the food enters the stomach. It is shown that the *tensor palati* muscles and the *palato-glossi* act in concert to form the arched band which shuts down against the tongue, and that the *palato-pharyngei* are not associated with the *palato-glossi* in constricting the isthmus of the fauces.

The foregoing explanations show that every muscle of the soft palate is active in deglutition, and that the food is effectually controlled without unreasonable action on the part of any muscle such as that generally imputed to the superior constrictor, which cannot act in deglutition, as supposed, its attachments making it impossible that it can press the food down the pharynx.

ARTICLE II.

Maryland and District of Columbia Dental Association.

[Reported for this Journal.]

The Fourth Annual Meeting of the Maryland and District of Columbia Dental Association was held in the City of Washington, on Tuesday, October 8th, in the parlor of the Imperial Hotel.

The President, Dr. B. F. Coy, presided, and called the

Association to order. A fair representation was present of Dentists from Baltimore and Washington, Dr. Atkinson of New York, and J. J. Caldwell, M. D., of Baltimore, and others from more distant cities.

A brief address of welcome was read by Dr. J. B. Ten Eyck, of Washington, D. C., which was followed by the annual address of the President, who alluded to the harmonious working of the Society in the past, and the fraternal feelings of all. The true work of the Society was just begun, and as we progress new fields of work show themselves. Whatever of interest that had transpired since the last meeting had been published in the Journals, and was doubtless attentively perused by all. The "New Departure" of Drs. Flagg, Chase and Palmer, was the most notable of the events of the year—an "old departure" it would doubtless be called by many; it was indeed only a statement in the main of old and well-known facts.

The division of the Association into "Sections" was a strong move toward organized work, and will greatly facilitate the studies of all in unknown or partially developed truths. Some improvements in the working of this plan will doubtless be made.

A question on which there seems a good deal of apathy, but which was one of paramount importance, was the prosecution of the New Rubber Suit. The gentleman who was now giving his sole attention and all his time toward this work should be amply repaid, and it should be the duty and pleasure of the Association to see that funds were provided to carry on this suit.

The presence of members of the Medical Profession among us was gratifying, and he trusted that we might be a mutual profit to each other.

After some routine business the Association adjourned.

AFTERNOON.

The calling of Sections was taken up. The first Section, that of Anatomy and Physiology, was represented by Dr.

Atkinson, who, owing to late notification, had not prepared a paper or written report. He had a paper on Pathology and Therapeutics, and also one on late Discoveries in Histology.

"Surgical and Operative Dentistry" was called, and a paper read by Dr. R. B. Donaldson, in which the "New Departure" creed was discussed. He thought it imperfect because supported by a theory so far unproven. It would surely take a remarkably clear demonstration of the truth indeed, to make the profession give up the use of gold. Is it possible that for fifty years the practice of the dentists has all been a huge mistake? Surely not. As to the theory of chemical action, it has not been finally accepted by those best qualified to judge of its merit. Gold has been used so successfully to make it impossible for such a theory to be true. The currents claimed to exist are undemonstrated. There is no intention to detract from the promulgators of this theory. They are in deep earnest, and entitled to great credit for their labors. But when facts are pressed to support theories, or claims are made for facts which are no facts, we can allow for fair intentions and no more. Our hopes are so often excited by promises of success, which fail of fulfillment, and we lose time in retracing our steps; so caution comes to us. The "eclectic" is the only proper system, and gold was certainly used by those who practised this system, more largely than any other material. Extensive use of this, and observation had taught us conclusively that if the end in view is to save teeth, we can come nearer to this end by eclectic treatment than by any other. That none of the materials used are best in all cases, but that each is best in its place. That was a fallacy which dogmatically asserted that "any tooth that was worth filling at all, was worth filling with gold," nor can we save all the teeth coming to us. But we can save for years of usefulness shells of teeth, with plastic fillings, which it were folly to try to save with gold. Still, while gold is not the best in all cases, it is certainly the best in very many cases. It has

always been known that plastic fillings were eminently useful, though the reading of his (Dr. Flagg's) paper would lead one to suppose that he had discovered it.

Is it a fact, as Dr. Flagg asserts, that in spite of the advance of dentistry in this country, our people are semi-edentulous, and that this is largely due to the use of gold? This will hardly be admitted by us. True, the land is flooded by artificial teeth, but those who wear them are those who never visit the dentist except to get teeth extracted and others inserted. The responsibility for this state of affairs rests not upon the dentists but upon the people themselves, who for fear of pain, or from love of money will not submit to operations which would save their natural organs. It is an outrage to saddle this state of affairs on a profession whose labors are most eminently successful. If people will visit the dens of quacks and charlatans you should not hold the better part of the profession responsible for this. We can only attempt to educate, but so long as people are gullible, they will be deluded by flaming advertisements.

It is not possible to save some teeth permanently; but most of those who make the artificial teeth never filled the natural organs these are to take the place of. And is it any wonder that Dr. Flagg abandons the use of gold when he asserted only a few years ago that he could fill a tooth with gold in two minutes? No doubt *he* can save more teeth with Amalgam.

How contradictory is all this. It cannot greatly benefit or injure the profession, but it may lead to investigations which will do good; but certain it is of the long list of plastic fillings in the market few are reliable and none so under all circumstances. No amalgam is or can be always reliable, and if we had a specimen which was just the thing, no dependence could be placed on the manufacturers to supply a constant and perfectly uniform article.

A PAPER ON LOOSE TEETH AND THEIR TREATMENT, was read, prepared by Dr. Merrill. It developed nothing specially new in treatment.

Dr. B. F. Coy, was the author of the next paper on **THE SIX YEAR MOLARS—THEIR TREATMENT, &c.** He alluded to the doctrine that inheritance of the jaw of one parent and the teeth of another gave rise to frequent disarrangement of the dental arch, the common sense remedy for which was extraction, the attempt at enlarging the width of the arch in such cases being usually a failure. The idea was advanced that the human skeleton was gradually growing less in size, and if the teeth do not decrease in size, there is no remedy but extraction to make room for the proper arrangement. It is a rare case perhaps when all the ten anterior teeth cannot be saved, and as the six-year molar comes in at a time when there are many drawbacks to its complete development, when it does its work of mastication and can step aside for the twelve-year molar, it is wise to extract it, if manifestly deficient in quality, and if there are symptoms of a crowded arch. Five years usually close the career of these teeth, and they should be removed in time for the advent of the next molars, when they would take their places, and the way be left clear for the third molar in turn.

The writer was opposed as a rule to the system of spreading the arch, as frequent disfigurement was produced, and the teeth themselves injured by the appliances used, to say nothing of the pain and annoyance to the patient. In all cases we should by management preserve the front teeth without filling. As a rule it was wise to extract the six year old molar in nineteen cases out of twenty.

The discussion of the subject of the morning was continued.

Dr. Atkinson desired to be set on the record as characterizing the articles of Dr. Flagg, published in the *Cosmos* under the title *Dental Pathology and Therapeutics*, as "Drivelling Idiocy."

He credited Drs. Flagg, Chase and Palmer with trying to do something, but to try to pass this off for having *done* something—against such an attempt he respectfully entered his caveat. If we teach, teach one truth and stand on it,

not on an assumption of knowledge. He would say with regard to the theory of mixing of races that he was not a believer in the doctrine of inherited jaws from one parent and teeth from another—the blending was complete. The whole being was half and half.

The papers of the morning were further discussed by Drs. Hunt and Winder, the latter concluded, after eight years close observation, that eight out of ten children inherited the teeth of the father. This was in opposition to the commonly accepted doctrine on this subject, and he was agreed with by Dr. Coy.

The discussion was continued by Dr. Hunt who stated that of one thousand crania examined by Dr. Winder, less than thirty had misplaced or carious teeth. He inquired what was the cause of this departure from normality, and thought it was our duty to search for those causes, that posterity might receive the benefit of our researches and studies.

Dr. Winder related an incident in the history of Dr. Riggs, relative to the question of the injuriousness of tobacco to the teeth. Dr. Riggs had written a good deal in the affirmative of this question, but had confessed to him (Dr. Winder) privately, that he did not believe in the doctrine of its ill effects, and stated that he kept a vial of tobacco-juice (under another name) in his office and used it as a local application. He had found it superior to anything he had ever tried as a gum wash.

Dr. Atkinson dissented from the views taken by Dr. Coy, that there was an inheritance of teeth from one parent and jaws from another. He was sure that there was perfect blending of types.

Dr. Ten Eyck enquired how long it was judicious to allow the six year molars to remain, where circumstances indicated their final loss, and was answered that about the eleventh year was the proper time for their removal.

Dr. Hodgkin dissented from Dr. Hunt's theory that we must endeavor to educate the people up to a standard of development, and thought that there was little probability of

our ever making selective breeders of men and women. So long as passion ruled—and it had and always would rule men in the selection of mates—there was no chance that a broad-jawed man would hunt up a like jawed woman.

Dr. Caldwell said that all infirm races faded away before the Anglo-Saxon. The history of all the world showed this. Where intermarriage of races occurred with the Anglo-Saxon, the inferior race, with its traces perished.

The subject was passed.

Dr. Atkinson read a paper on Physiology, taking the ground of correspondences or analogies in the human body to things in nature. He made the brain to have its analogue in the breathing; the face corresponded to æsthetics; the sacrum to the animal tail of the lower orders; logic found its counterpart in the frame-work of the universe, and had its analogue in the skeleton; mathematics was related to the limbs,—legs, arms, fingers, toes, etc; the pelvis and nates the cosmology of the universe; the genitals belonged to physics; chemistry was all the ingredients of the body, etc.

The paper was discussed by Drs. Winder, Hodgkin, Donaldson, Hunt and others. Dr. Hodgkin seemed inclined to make light of the doctrines of the paper, while Dr. Hunt said that it was not wise to throw aside as useless, things we might not understand. Many things which sound to us like empty words, are afterwards found to be the deepest truths. The fault was with ourselves, not with the paper. Adjourned.

NIGHT SESSION.

The report of the Committee on Sections was read, and Dr. Noble explained that in the inception of the work it could not be expected that this plan would work smoothly, many not fully comprehending the arrangement. After further explanation of the plan, showing how it was thought that by each member taking a special subject and working over that year after year, better work would be done than if performed in the usual desultory manner.

The various Sections then proceeded to elect chairmen,

(which Dr. Atkinson insisted should be *Chairmans*), the Sections standing as below.

SEC. 1.—*Anatomy and Physiology*.—R. B. Winder; W. H. Atkinson; J. W. Correll, M. D.; J. J. Caldwell, M. D.; J. R. Walker; J. J. Williams; W. W. Evans; J. L. Wolf; Thos. B. Evans, M. D.; H. M. Schooley.

SEC. 2.—*Histology and Microscopy*.—W. H. Atkinson; W. H. Dwinelle; J. R. Walker; H. H. Keech; F. F. Drew; Thos. B. Evans; R. B. Winder; H. M. Schooley; Ephraim Cutter, M. D.

SEC. 3.—*Pathology and Etiology*.—E. P. Keech; W. H. Atkinson; J. R. Walker; H. H. Keech; F. F. Drew; J. B. Hodgkin.

SEC. 4.—*Diagnosis and Therapeutics*.—J. J. Caldwell, M. D.; W. H. Atkinson; H. B. Noble; H. C. Thompson; B. F. Coy; C. T. Brockett; J. M. Riggs.

SEC. 5.—*Chemistry and Materia Medica*.—C. E. Duck; R. Finley Hunt; S. M. Field; J. J. Caldwell, M. D.

SEC. 6.—*Metallurgy and Chemistry of the Metals*.—R. Finley Hunt; A. H. King; Henry Townsend; C. E. Duck; E. Howard; M. W. Foster; J. B. Hodgkin.

SEC. 7.—*Anæsthesia and Anæsthetics*.—H. C. Thompson; J. J. Caldwell; B. F. Coy; G. B. Welch; J. B. Hodgkin; Lawrence Turnbull.

SEC. 8.—*Surgical and Operative Dentistry*.—B. F. Coy; R. B. Donaldson; H. C. Thompson; J. Curtiss Smithe; H. B. Noble; J. B. Ten Eyck; Wm. Merrill; C. T. Brockett; J. Emory Scott.

SEC. 9.—*Artificial Dentistry*.—M. W. Foster; T. S. Waters; C. E. Duck; W. W. Evans; O. H. Brightwell; R. Finley Hunt; E. Howard; A. H. King; H. Townsend; J. Curtiss Smithe.

SEC. 10.—*Dental Education and Literature*.—H. B. Noble; W. H. Dwinelle; T. G. Loockerman; B. F. Coy; J. B. Hodgkin; T. S. Waters; R. B. Donaldson.

Dr. Atkinson then delivered a lecture on Histology, Production, Maintenance and Reproduction of Tissue, illus-

trated with diagrams of the chick in various stages of hatching. In the course of his discussion of the evolution of tooth structure, he showed diagrams illustrating lacunæ, or their analogues in the dentine, with fibres crossing from one to the other, presenting a reticulated appearance. He showed also what he styled protoplasmic strings in enamel, and also lacunæ. He thought there was no differentiated nerve in dentine; and that as teeth were liable to be set on edge after the loss of Nasmyth's membrane, that this was proof of the existence of fibres for the nourishment of enamel. He also took the ground, in opposition to the books, that there was no vein or artery in the pulp, but only a capillary network; and was understood to say that the pulp was nerve tissue. Adjourned.

SECOND DAY.—MORNING.

E. Cutter, M. D. of Boston, and L. Turnbull, M. D. of Philadelphia, were elected honorary members of the Association.

Letters from Drs. Dabney and Edwards, of Va., regretting inability to attend, were read, and also from Dr. Dwinelle, of New York.

The report of the Section on Anæsthesia, was read by Dr. H. C. Thompson, of Washington, D. C. It was a copious resume of the status of *Anæsthesia* and *Anæsthetics*.

The following is an abstract of a part of the paper:

"After some prefatory remarks on the differences in opinion on the part of the advocates of ether and chloroform, and the statement that their differences might be in part reconciled by the differences between ordinary civil hospital cases as found in the North, and operations in the field:

"It is asked, 'is the proper study of the field of anæsthesia the previous condition of constitution of the patient? Is it surgical shock which kills the patient, or is it the drug? Is some obscure change in the blood itself the cause of the anæsthesia, and of the accidental catastrophe, or is it that to mere incidents as to position, dress, the method of administration, we may greatly ascribe the untoward result?'

These are too grave questions to be flippantly handled or hastily decided, and we honor the men who, in a true scientific spirit undertake their cautious, slow solution."

Dr. Waterman brings to the aid of the pathologist, one of the newest in application of scientific instruments in nosological art—the spectroscope, and with all the ardor of an enthusiast, attempts the demonstration of the problems of the life and death state—anæsthesia, as seen under nitrous oxide, ether and chloroform. Special attention is given by him to the first-named gas, which his demonstration *seems* to prove to be of great danger, and which his clinical practice corroborates fully. To summarise:—Blood seen under the spectroscopè gives certain characteristic lines or bands in the spectrum. These, as are all other lines in spectral analysis, are constant and definite. No other could be mistaken for blood, nor could this be ever mistaken for any other organic substance. Oxydized blood displays a different spectrum from deoxydized blood, and putrid blood shows a spectrum peculiar to itself, unmistakably marked. The deoxydized blood can be restored to a normal state spectroscopically, by reoxydization, and the changes that play through it are sharply defined and well known.

On the other hand blood which has been subject to the action of nitrous oxide gas, and blood which has become putrid, show similar lines in the spectrum, and no manipulation can develop in blood acted on by this gas other lines than this "death line" of putridity, or its semblance, spectroscopically considered, and the conclusion which is reached seems an inevitable one, viz., that the changes wrought in blood by the Protoxide of Nitrogen and the destructive changes in which putridity is set up, are identical. If there is fault with this theory, it must be set down to an imperfect understanding of the conditions, for the defendants of the spectroscope contend for its infallibility, and with justice doubtless. We must guard this point by the observation that whilst according to the instrument all that its most zealous advocates claim for it, we must bear in mind that its

interpreters are human, with human frailties, the most fatal of which to severe scientific research is the tendency to "jump to conclusions." It was Agassiz who claimed that not one man out of thirty was competent to make the simplest observation; and we know the fatality which besets the most judicial of us in being able to see only that which we are looking for.

The rationale of the action of nitrous oxide is certainly obscure. The hurried respiration, the cyanosis, the staring eyes, are fearfully suggestive of partial asphyxia, and certainly suggest imperfect decarbonization of the vital fluid. On the other hand, the rapid recovery, the occasional cheerfulness, the lack of loss of tone, and, in a word the usual speedy return of normal conditions, as a rule, seem to indicate that no great morbid change can have taken place in the blood, and that injury is not often apparent. The effect of these studies however, in lessening the indiscriminate administration of this gas is evident; and curiously, coincidently with these investigations the demand for it seems to slacken.

The studies of Dr. Waterman on chloroform and ether, spectroscopically, are of less moment as to satisfactory results. He considers as one of the dangers of chloroform, the retention of its vapor in the lungs, poisoning much as does carbonic acid gas, by displacement, its specific gravity in vapor being great; and he suggests as a remedy the inhalation of hot air.

The paper of Prof. Chisholm on "What anæsthetic shall we use?" is a special plea for chloroform, in which he takes the bold ground that the dangers to be apprehended from the administration of that drug are in an inverse proportion to the profoundness of the anæsthetic condition, and that reflex action is the cause of syncope and death. The ground is taken boldly that as surgical shock in *ante-anæsthetic* days was the occasional cause of death, so *now* the same cause inheres, and as it was then manifestly due to reflex disturbance, that so now the same reflex action and danger

are to be and can be averted by profoundness of anæsthesia. That weak lungs or heart are no contra-indication of chloroform, but that they even suggest a more vigorous use of the drug;* as full anæsthesia will tend to so overwhelm the medulla as to prevent reflex action.

This is bold doctrine certainly, and the conclusions, though based on extensive practice and copious statistics, are such as most of us would shrink from. Yet we can hardly tell how far this shrinking from an acceptance of such doctrine is the effect of the previous instillment of a contrary doctrine, so potent is education and precedent in moulding our ideas of the proper thing. It is the bold who ever succeed; and that death at the surgeon's hands is due to timidity arising from imperfect knowledge rather than from the boldness of complete mastery of the subject is more true than we perhaps care to acknowledge.

The horizontal position is insisted upon by Prof. Chisholm, as indeed it is by all who use anæsthetics, as a *sine-qua-non* to its safe administration; and previous abstinence as a matter of course. The pallor which has frightened many timid operators, is as he suggests only the precursor of emesis, which if occurring, should be watched, as fatal accidents seem to have resulted from the entrance of the ejected food into the trachea.

Death at the hands of the dentist is, relatively speaking, much more common than at the hands of the surgeon, when chloroform is used. The solution seems to be found in the fact that anæmia of the brain is induced by the drug, which assuredly depresses all the vital functions, and this anæmia inducing syncope, is again reflected on the heart, inducing paralysis of that organ; then, with the two legs of the great tripod of Bichat taken away, the catastrophe is precipitated. Hence decubitus must be insisted upon.

*This is suggestive of the commendation of Mr. Sam Weller, on hot punch, which he observes was the best thing in the world for warding off an attack of rheumatism; and that if it failed to prevent an attack of that malady, it was because the patient fell into the vulgar use of not taking enough of it.

The preparation for anæsthesia is well-known. The horizontal position just alluded to, and the empty stomach; the perfect freedom of respiration, guaranteed by the loose clothing; and finally the administration of whiskey. This last should be ever borne in mind, remembering that alcohol is of itself a true anæsthetic, and its usefulness in conjunction with chloroform is no longer a matter of theory. Yet the old observation of Paget corroborated by every day experience must be borne ever in mind, that none bear operations so badly,—in no case does the surgeon so shrink from an operation, as on the confirmed inebriate.

Lately, Dr. Hunter Maguire, of Richmond, has announced, and his observations are confirmed by others, that Quinia is of essential service in preventing or modifying surgical shock, often more to be dreaded than the effects of the anæsthetic. A discovery of propound importance, if true; and one which will go far to relieve the mind of the sympathetic and ever solicitous surgeon.

Dr. Combes, of Louisville, Ky., in a late paper on chloroform, thinks the chief danger from that agent to arise from an accumulation of it in the system, which result he judges more likely to occur where it is given tardily. And the weight of opinion is at present in favor of rapid overwhelming of the patient, rather than the slow and cautious use of the drug formerly advised. Caution is not at all incompatible with vigorous action, and the timid creeping of the fearful may indeed be a cause of unsuspected danger—injury arising out of the very means taken to prevent it. Dr. Combes thinks our American people less easily overcome by chloroform than Europeans, except the Irish, and finds that Germans and Negroes yield readily to its influence.

We may sum up the present attitude of the advocates of anæsthesia in the famous words of the famous Syme, who said that he "had given chloroform for years without an accident. He attributed his success to two causes: first, he always used pure chloroform, and second, he gave plenty

of it." And he is followed by Prof. Chisolm with the glowing tribute to chloroform, that it is God's latest and best gift to man.

[TO BE CONTINUED.]

ARTICLE III.

Teeth and Flour.

BY EPHRAIM CUTTER, M. D., CAMBRIDGE, MASS.

Extract from a lecture delivered September 27th, 1878, before the American Academy of Dental Science, Boston.

There is no doubt that the decay of teeth prevails among flour-eating people, and it is very humiliating to our modern civilization to have it characterized so generally by the occurrence of diseased teeth. Young persons may be seen on the lines of travel with several incisors gone and others decayed. In the report of the Massachusetts State Board of Health, 1877, there are some statistics as to the prevalence of decayed teeth among school children in Middlesex County. Out of 880 children, mostly under 12 years of age, two-thirds were found by the teachers (of course rather incompetent examiners,) to have decayed teeth! Some of the schools were as follows: Warren Lawrence Primary, 113 scholars, 100 with decayed teeth; Plympton Street Primary, 74 scholars, 67 with decayed teeth; Highland Street Primary, 71 scholars, 25 with decayed teeth.

It is very probable, that had these same scholars been subjected to an examination by a committee of this Society, that hardly a child could have been found with perfectly healthy teeth. Now it seems most natural to infer that if an individual were to have sound teeth he should possess them during the first decade of life, and if this period passes off with no sound teeth, all the successive periods must transpire with a similar increased deprivation. Statistics like the above, if they are a fair average of the dental con-

dition of the people of Massachusetts, are astounding, and should arrest the attention of the philanthropic anthropologist.

The question, next naturally arises, whether savage races who are so uncivilized as not to feed upon flour present such an amount of prevalence of decayed teeth. The great Indian historian and painter, Catlin, decants upon the beauty and perfection of the teeth of the North American Savages, and calls particular attention to the fullness and perfection of the dental portion of the unburied dead skull.

In the wanderings of a F. R. C. S., among the Krumen of the Grain Coast, of Western Africa, there is this statement :

“Rev. J. S. Wood’s *Uncivilized Races of Men*.” J. B. Burr, Hartford, Conn., 1871, p. 545 : “Odontology has its mysteries. Dentists seem or rather seemed to hold as a theory, that destruction of the enamel involves the loss of the tooth. The Krume hack their mastication with a knife or rough piece of hoop-iron, and find that the sharpening instead of producing caries, acts as a preservative by facilitating the laniatory process. Similarly there are physiologists who attribute the preservation of the negro’s teeth to his not drinking anything hotter than blood heat. This is mere guessing. The Arabs swallow their coffee nearly boiling, and the East African will devour his agali or porridge when the temperature would scald the hand. Yet both these races have pearls of teeth, except when they chew lime or tobacco. They always demand rice, that being a necessity with them, and as long as they get their pint and a half per diem, of rice, they can stand unlimited work.

“They cook the rice for themselves in their primitive but effective manner, and feed themselves as turkeys are crammed, seizing large handfulls of rice, squeezing them into balls, and contrive in some mysterious way to swallow them without being choked,” p. 546 do.

In this country the inquiry was made of the Indian Commissioner, Mr. Smith, as to the prevalence of decayed teeth

among the Indians. His reply was, that during an intimate acquaintance with them for a quarter of a century, he had *rarely* seen a decayed tooth.

Allow me to read a letter lately sent from the Indian Territory in reply to similar inquiries :

OFFICE WICHITA AGENCY, INDIAN TERRITORY,
ANADANKA P. O., July 31st, 1878.

“ E. CUTTER. — *Dear Sir.*—Your note of inquiry, of July 10th, is at hand. I have delayed answering sooner, in order to gain further information concerning the subject of your queries. Dr. O. G. Given, Physician to the Kiowa and Comanche Indians, writes :

‘ I do not remember of seeing a single case of decayed teeth among the children under ten years old, of the Indians on this reservation. Their diet is largely meat. He further says : Close observation might probably discern some cases ; I think, however, very rarely—the first or milk teeth loosening and dropping out.’

‘ About the same may be said in reference to the Indians of this reservation. Our physician has removed the primary teeth occasionally, but does not remember to have ever observed decayed teeth in children under ten years of age, and indeed, decayed teeth are rare among the Indians of any age, and are the exception, not the rule.

Their diet is chiefly animal food. At this season of the year, green corn, melons, and the produce of the garden are freely made use of by them, and of late years the government has furnished them some flour, sugar and coffee which they use to some extent in conjunction with animal food ; they are extremely fond of coffee. The meat is broiled or sometimes hung in strips and dried, and afterwards broiled. They seldom, or never partake of food without afterwards thoroughly rinsing the mouth with water.’

Respectfully,

MRS. DR. F. GRINNELL.”

Now without inquiring further, the comparison between these two classes of mankind in this respect is decidedly in favor of the savage. Now the civilized having the advantages of a regular supply of food, of comfortable houses, of clothing, of warmth, and of the stimulus of high mental culture, it seems strange that the bony tissue should so

suffer. A great difference between the two classes lies in the food ; civilization has adopted as a staple article of food, flour ; and flour is an impoverished food ; impoverished in the very elements that go to make up the teeth, viz. phosphorus in its combinations, nearly three-fourths is withdrawn.

Is it not natural to expect that the bony structures should suffer from this great withdrawal ? for it is a great withdrawal. Seventy five per cent. diminution of anything. Can we realize it ? Cut down prices on your fee table three-fourths ; remove three-quarters of the space from this auditorium ; cut off the same quantity of time from the hour of daylight ; curtail our bank circulation three-fourths ; take away three-fourths of the water supply of a city ; would there not be trouble everywhere ? And why should not the bony tissues suffer in like manner when their food is withdrawn ? We think they do, and that this impoverishment in flour of mineral ingredients does go a great way in explaining the defectiveness of teeth in civilized races, and their perfection among the wild races who have lived but little, if at all, upon flour. Perhaps a little evidence in a contrary direction may throw light upon this. A gentleman of your profession informed the writer, that he filled fourteen cavities in the teeth of his first-born child by the time he was four (4) years of age. He then placed his family upon the use of animal food and the unbolted meals of different grains, and the next child had no retarded dentition, and not a decayed tooth up to the same age ! The teeth which decay are not compacted or knit together with the firmness of the healthy teeth. There seems to be an arrest of perfect development—though what can be more natural than to expect imperfect development and decay when three-fourths of their proper dental food is materially withdrawn from an article of diet more largely employed than any other ? How curious it is to see infants not cutting at all, until they are twice as old as they ought to be ! The good effect of whole grain diet is seen in the sec-

ond child above alluded to. To be sure it is only *one* case, and must not be made too much of. Still, taken in connection with the evidence from the savage races of man, the conclusion cannot be resisted, that a portion of the present existing dental diseases might be avoided by simply persuading the people to give up the use of a food which the accurate test of the chemist show us to be so lacking of mineral ingredients and consequently so unworthy of the high estimation it has at present.

Another important question is, as to how long time it would take to produce any effect in this direction. Some think it must take a long series of years, generations perhaps. While it is not intended to ignore hereditary or other peculiarities, still it does seem possible, from the case already alluded to—to produce changes faster than this. Severe sickness will, I am told, produce a great deal of physical change for the worse in teeth; and on the other hand as the general health improves after convalescence, they also increase in firmness and strength—even in the course of six months, showing that the processes of nutrition and repairs in the teeth are not quite so slow as imagined. But be this as it may—let the time required be ever so long, there is no good reason why the laws of healthy eating should not be observed, inculcated and enforced. In the presence of such an audience these views are put forth with some degree of timidity for fear that the speaker may be thought to be carrying coals to New Castle, and only inculcating ideas which the hearers are every day trying to impress upon their patients. Our object in recalling these things is the hope that your body may at sometime be induced in some official manner, to express publicly their opinion of the necessity of a return to articles of diet in which the natural normal proportion of mineral ingredients is preserved. Public opinion is a very hard thing to mould, affect or influence. Only by dentist after dentist, lecture after lecture, society after society, can these truths be so handed in as to wean people from eating flour who love its

taste and love its beautiful white color, and will continue to eat it sometime, even if they know its color resembles the paleness of a corpse, and its taste is simply a matter of education and habit.

ARTICLE IV.

Is Dentition one of the Causes of Cholera Infantum? If So, In What Way.

BY J. H. NOWLIN, M. D., LITTLE ROCK, ARK.

In your issue of June 15th I read, with interest, an article from the pen of William S. Stewart, A. M., M. D., on "Some Considerations in regard to the Causes of Cholera Infantum." After mentioning several causes, and giving his reason for considering them such, he continues as follows—"Teething may be considered a concomitant cause of cholera infantum, as *it is during* dentition (all italics mine) that it occurs; undoubtedly the one is a great aggravation of the other. To what extent, if at all, dentition may be a *cause* of this disease, authors seem to take little interest," etc. And again—"It has been in *theory*, to me, one of the *chief* causes of the disease." Unfortunately for his readers, the Doctor failed to give specifically and definitely his *theory* upon the subject. It would have been much more satisfactory than to have dismissed the matter as he has done, with the statement of the simple facts that "the disease occurs during dentition." That "we have as one of the first symptoms an excitement of the *buccal* and *salivary* glands of the *mouth*," "their secretions being more (than usually) acid," etc. Now, it is said, "Doctors will differ;" indeed, the saying long since passed into a proverb; but why, I am not prepared to say, as men of all other professions and persuasions differ quite as widely as doctors. For example, lawyers, clergymen, etc., than whom none can differ more.

When a student, nearly four decades in the past, I was taught to believe that cholera infantum often occurred during the first few weeks, or even days, of the earthly existence of children, long before the "period of dentition," or even the "excitement of the buccal and salivary glands of the mouth." My experience, thus far, has fully confirmed the teaching of my preceptors in this particular. I was also taught, and pretty fully imbibed the view, that dentition, or the process of teething, was as really and truly a physiological one, as the growth and development to perfection of any other part of the animal economy. Nor have I ever yet had any good reason to believe otherwise than that it is commenced and perfected with as little suffering or detriment to the young animal as the growth of any other part of its being. Moreover, I am not aware that any professional man ever maintained the contrary, except (*miserabile dictu!*) in relation to the genus homo.

Why this exception? The process is precisely the same in the brute as in the human, in utero, as during the first, second, third, or fifth year after birth. What is there in the growth of the teeth, and the absorption of the gums, to give place to the former (the whole of the process,) that can possibly produce irritation in any degree, not to say sufficient to give origin, by sympathy (reflex action,) or continuity of surface, to laryngitis, croup, bronchitis, or the various troubles of the alimentary tube? Is absorption an inflammatory instead of a physiological act? I have never so considered it. Where, then, is the seat, and what is the morbid action thought to be so potential of mischief? So far I have searched for it in vain. Can it be in the failure of the absorbents to remove the very delicate and vascular gum tissue, containing such an abundance of nerve filaments, so that the unyielding and persistently progressing teeth impinge upon the former with such force as to bring into existence, through this nerve element, the terrible consequences so frightful to contemplate, which we see in the journals of the present day, as well as those of past ages.

If this should be regarded the true solution of the difficulty, I would ask why the morbid phenomena are postponed, for the most part, till only a very short time before the eruption of the teeth? If absorption is wanting entirely, pressure must begin with the growth of the teeth, and be exerted, not only upward, but around their entire circumference. The resulting evils would then be seen from birth to the close of the dentition period, but diminishing as the teeth approach the surface of the gums, the resistance becoming less and less till the teeth are liberated. With much interest, and for many years, I have noted and canvassed the views expressed and defended by the representative men of our profession, and have seen, with pleasure, a gradual but steady falling off of the advocates of the old theories of the multiform evils of dentition. Indeed, at this moment, I cannot mention one on either continent, who really deserves to be considered in the upper story of our noble profession, who still adheres to the views of John Hunter, Marshall Hall, etc., great as those men were and are deservedly considered.

During the early part of my professional labors, say through the fifth and half of the sixth decades of this century, in conformity to the customs of the time, as well as in following (in a small way) the precepts and examples of the eminent John Hunter, who said he "was not ashamed to acknowledge that he had cut the gums over the same teeth as often as ten times;" and of Marshall Hall, who said to his class, "In a difficult case I would not hesitate to recommend the incision of the gums *every* day, and even twice a day;" beside many other very eminent men since their day, I occasionally was induced to split the gums and give the teeth a chance to escape from their imprisonment, and the infant from its perilous condition. Close observation, however, followed assiduously, failed, in a single instance, to reveal any good result, unmistakably traceable to the operation. I always cut down to the tooth, as evinced by the grating of the knife upon its crown; yet I never saw a

tooth, when thus freed, jump through the incision, as might have been expected from the amount of pressure supposed to be exerted upon it by the resisting gums! Another very extraordinary observation I made, quite in conflict with the pressure theory, viz., that no such thing ever occurred as retraction of the edges of the cut, although the tooth might be seen by the naked eye if the cut edges were forced asunder; and, besides, if the tooth was not too nearly through to permit adhesion, the opposing edges would grow together in a few hours, mangle the inflammation, swelling, pressure, etc., supposed to be present.

These observations, with others of like character, convinced me long ago that the world had been most immensely, detrimentally, and unmercifully humbugged by our profession, upon the subject of "first dentition;" and hence, for the last ten years, at least, I have fought earnestly and most persistently against the teachings of a majority of the profession, who still adhere to the old theories, as well as against the current and popular views upon the subject, as quite a number of my professional brethren can testify. Mothers I sometimes have found it difficult to convince. Wedded to the belief imbibed from their parents or family physicians, who knew all that could be learned, in their opinion, they have, or seem to have, no desire to know anything to the contrary. A mother presents a child eight to eighteen months old, and wishes me to examine its gums. Its bowels are "running off;" it "has little appetite," "has lost flesh, and is very fretful," etc. I reply, "Now, my good madam, put your finger upon the tender gum, and see if the child suffers from the pressure." "O, no sir!" she immediately replies, "the child loves to have me press upon its gums, and it loves to bite on the rubber ring and any hard substance it can get hold of." "Well, madam, do you not suppose your child's gums are as tender and as easily hurt as your own." "Of course I do, sir." "Very well; now if your gums were inflamed, swelled, tender and painful, do you believe you could bite the rubber ring and other

hard substances, and permit your gums to be pressed upon, like your child does." This is coming to rather close quarters for the good woman, and she makes a flank movement by saying, "O, sir, I think the baby's gums must itch him very badly!"

I feel, Mr. Editor, that it is full time our profession had begun to undo some things which they have long done, and to unteach many things they have taught, which have given origin to much of the empiricism of the day.—*Med. and Surg. Reporter.*

ARTICLE V.

Some Experience with Dental Amalgams.

The tendency of practice to-day is towards *plastic* fillings. Of these, amalgamated metallic alloys hold an important place in Dentistry.

These alloys have been much improved in the last five years, and there are some of great value. The metals most usually employed are Tin and Silver. When composed of these alone, they do not make a plug which will retain its original shape for a long time; that is, there is a tendency to assume the *globular* shape, and hence, the plug draws away from the edges of the cavity, and leakage occurs. I have found silver and tin amalgams leak badly after six months, that did not leak at all the first four weeks.

What will prevent leakage? I find that a large proportion of gold will lessen the leakage in any formula of tin and silver. That in certain proportions of tin and silver the addition of gold will wholly prevent leakage, not only the first month but more than a year. My experience dates only for a period of two years. Antimony added to alloy in the same proportion, by *weight*, as gold, will prevent leakage as gold does. But as the bulk of an ounce of antimony is about three times that of an ounce of gold, it is easily seen

that an oxidizable metal takes the place of one not so, in immense proportion. And, therefore, such an amalgam would not keep its color nearly as well as a gold alloy. Some very *leaky* amalgams keep a good color.

Plasticity.—Gold makes an amalgam more plastic.

An increase of tin makes an amalgam more plastic.

Antimony modifies plasticity.

An increase of mercury *prolongs* the period of plasticity.

Hardness—An increase of silver makes an amalgam harder. The same is true of Antimony.

Softness.—An increase of tin makes a plug less hard. The same is true of gold.

Brittleness.—Antimony increases brittleness. The same is true of gold.

Quick Setting.—Silver promotes quick setting. Gold does the same.

Antimony retards it.

Tin retards it.

Strength of Edge.—Silver increases the strength or toughness of an amalgam.

Color.—A combination of metals which would keep a good color in one person's mouth might not in another, owing to the difference of gases and acids bathing the plug. A heavy proportion of gold in an alloy would cause the plug to keep bright more uniformly than others.

It is *not* the *mercury* that discolors, principally, in an amalgam, and therefore, so far as color is concerned, it matters not so much whether there is 30 or 100 per cent. of mercury.

The silver on the surface of an amalgam plug may be discolored by common salt forming argentic chloride. It may also be discolored by eating eggs, forming on its surface argentic sulphide. Both discolorations are easily removed by using water of ammonia. The tin on the surface of amalgam is affected in the same way as silver.

Discolorations in Amalgamating an Alloy.—When an amalgam is made of gold alone, no discoloration takes place,

as may be proved in washing in alcohol. When *silver* alone is amalgamated, only as light yellow is perceived. When tin alone is amalgamated, a black oxide in great abundance is washed out. When an alloy of gold, silver and tin is amalgamated and washed, a great quantity of black oxide is washed out. A chemical analysis of this black wash shows it to be stannous oxide, or protoxide of tin.

The more gold there is in an amalgam, the more oxide of tin seems to be formed in the process of amalgamation. After this oxide is all washed out, an additional quantity of mercury to the clean mass will develop a fresh quantity of oxide, produced by the same means. If the alloy is amalgamated *under* alcohol, so that the air does not come to it, less oxide is formed.

Thus, we see that the oxidation is at the expense of the tin.

Discoloration of the Surface of Amalgam Plugs.—In mouths through which passes sulphuretted hydrogen, the tin and the silver may both be blackened, which black is stannous sulphide, and silver sulphide, and adheres tenaciously to the plug. The common fruit acids produce stannous oxide and silver suboxide, both black, but readily removed by the oral fluids.

The greater proportion of gold lessens oxidation and consequent discoloration.

Discoloration of Dentos under Plugs.—This is caused by leakage by the side of the walls, producing on the amalgam the black oxides already spoken of, which may show through a thin wall of dentos, or even a thick wall when the oxides penetrate the tubuli of the dentine.

Oxide of Tin (Stannous Oxide).—If there is but little formed in amalgamation, it may be left in the mass for the posterior teeth.

A plug containing it, is lower on the scale of conductivity, and consequently is suitable for that portion of the cavity next to the pulp. On the other hand, it acts as a foreign

substance, and as it makes the plug less dense, it is less strong, or is more brittle.

Conservative Effects of Leakage.—The stannous oxide that forms under a leaky plug and penetrates the dental tubuli, has a preservative effect on the dentos.

Are Amalgams Stable.—Those made of gold or silver or tin are permanent.

Amalgams of Sodium, Potassium or Aluminum are very unstable. Quicksilver will unite so quickly with aluminum that the heat created is sufficient to *burn* the palm of the hand on which it is mixed. It will then immediately crumble to powder. I tried aluminum in gold alloy by using only one part of aluminum to one hundred of the other metals, and found they would disintegrate in a short time. Even one-half per cent. of aluminum will ruin an amalgam after it is in the tooth. Mercury is held very tightly by silver. An amalgam containing silver 100 parts and mercury 43 parts refused to part with any of the latter metal, under a pressure of one hundred and fifty thousand pounds to the square inch! The ordinary dental amalgams will not part with any portion of their mercury, below 400 degrees of heat, if properly mixed.

The idea that amalgams are injurious to the system on account of the mercury they contain has been some time exploded.

QUICK SETTING may be promoted by using warm instruments, but at the expense of strength in the plug.—*Dr. Henry S. Chase, in St. Louis Dental Quarterly.*

ARTICLE VI.

The Action of Anæsthetics.

The double danger of anæsthetics, arising from their variable influence on the respiratory and cardiac centers, has long been familiar to those engaged in their administration. This double action has lately been studied on

animals by M. Vulpian, who has communicated to the Academie des Sciences a note on the subject of some practical interest. The special point which it embraces is the effect of the various anæsthetic agents on the pneumogastric, as shown by the test afforded by the experiments of Weber and Traube on the section and stimulation of the nerve.

Curara, as is well known, does not influence, in any considerable degree, the effect on the heart of faradisation of the divided pneumogastrics. The heart is arrested in paralytic relaxation, but gradually, after some seconds, its movements recommence, even though the ends of the pneumogastrics are still being stimulated. Nevertheless, the effect of faradisation of the peripheral segments of the pneumogastrics is not absolutely the same in a curarised and in an unpoisoned animal. The effect of faradisation of a single vagus is less marked, and the diastolic arrest of the heart is less prolonged under the influence of curara. If the influence of the poison is profound, there is a period during which the strongest faradisation of the pneumogastrics has no other effect on the heart than to accelerate its movements. From this it is evident that the curara does not, as was once supposed, leave intact the cardiac extremities of these nerves.

Anæsthetics, however, have been found by M. Vulpian also to have a marked and very different influence on the excitation of the peripheral extremities of the pneumogastrics, and a still greater influence on the effect of excitation of the central extremities of the same nerves. The effect of chloral hydrate may be taken as an instance of this. If a solution of chloral be injected into the vein of a dog in a quantity sufficient to produce a profound sleep, complete anæsthesia is produced. The movements of the heart and of respiration continue. Occasionally, especially if the injection has been rapid, the respiratory movements suddenly cease, the heart continuing to beat for some minutes. Commonly the breathing recommences if artificial respiration is maintained for a few minutes, or if the trunk be

faradised, intermittently, about twenty times a minute. It is sometimes necessary to continue this respiration for ten or twenty minutes before the spontaneous movements recommence. Occasionally this respiratory syncope, as it is termed by M. Vulpian, occurs only some time after the injection, and during an experiment, perhaps in consequence of the traumatic irritation. Very similar accidents may be observed in animals placed under the influence of ether, chloroform and analogous substances.

Another accident which may occur in dogs under the influence of chloral, is the more or less sudden arrest of the heart's action, either during the intravenous injection or during an experiment involving irritation of the sensory nerves. The respiratory movements continue for some seconds after the heart ceases to beat. It is very rarely that the cardiac contraction can be restored, by faradisation employed at the moment at which the heart has ceased to beat. This cardiac syncope is also observed in animals under the influence of ether and chloroform. It is certainly sometimes due to the reflex influence of nerves irritated during an operation, but occurs as a result of this irritation much more readily in animals under the influence of an anæsthetic than in those which are not, or which are under the influence of curara. The comparative immunity from this accident which is presented by curarised animals is no doubt to be attributed to the influence of the poison in moderating the action of the pneumogastrics upon the heart.

From the phenomena mentioned above, it is evident that the respiratory center suffers remarkably in animals under the influence of anæsthetics, and especially under that of chloral. A slight increase in the quantity of chloral in the circulation, or a reflex influence, may arrest its action. So also with the cardiac center. If the experiment of faradising the pneumogastrics is repeated upon animals under the influence of chloral, it is found that the stimulation of the central ends of the divided nerves arrests the movements of respiration, just as in an animal of the same kind under

normal conditions ; but whereas in the latter the respiratory movements go on again spontaneously and easily in most cases, in spite of the continuance of the stimulation ; they do not return spontaneously in dogs under the influence of chloral, and the animals die unless the faradisation is stopped and artificial respiration employed, either alone or with the addition of intermitting faradisation of the trunk. Sometimes a few seconds' faradisation of the superior segments of the vagus nerve is sufficient to produce this arrest. Thus under these conditions we may have, on faradisation of the central ends of the divided pneumogastriacs, the same effect which M. Paul Bert has observed in animals not chloralized—sudden death. If the experiment is repeated in the same dog, the same result may be obtained two or three times, but no more. It is subsequently impossible thus to cause a persistent arrest of respiration. The spontaneous movements return after a suspension of a greater or less duration, although the faradisation of the superior extremities of the vagi is continued. If in the same complete chloralization the peripheral extremities of the pneumogastriacs are faradised, the heart is arrested in diastole just as in animals, under normal conditions, and, what is rarely observed otherwise, it may be permanently arrested if the stimulation is prolonged for a short time.

These experiments illustrate very strikingly the phenomena which are sometimes observed in man, and they are of especial value in their proof of the influence which traumatic irritation may have in arresting the action of a centre depressed by the influence of an anæsthetic. But the experiments stop just where we should like them to go on. The differences in this respect, if any, which are to be observed between ether and chloroform is a point of great practical importance, and on which we hope M. Vulpian may be able to furnish us with further information.—*London Lancet.*

ARTICLE VII.

How to Make Nerve-Bristles.

BY THEODORE F. CHUPEIN, D. D. S.

Take an old excavator; remove the temper by heating it red-hot; file this down with an ordinary bench file as small as possible. When the file becomes too coarse to reduce it further, hold the handle of the instrument between the fingers so that the working point or end will lay flat on any level surface, say a piece of soft pine wood; continue the attenuation of the working end by rubbing coarse emery-paper first, and fine emery-paper secondly over this, turning the handle of the instrument round and round with the fingers of the left hand, in which it is held until the fineness of a hair is attained; lastly, with a slip of Arkansas oil-stone, continue the rubbing until all the scratches of the fine emery-paper are removed. Next, to make the hook. It would be useless to attempt to form this with the ordinary, or even with an exceedingly small pair of flat-nose pliers, as they never could form a hook sufficiently acute at the turning point. For this purpose take the handle of an old separating file, and with a bench file bevel off the end in the shape of a carpenter's chisel. Now lay the excavator, which has been prepared as directed, on this, allowing only as much of the hair-like end to extend beyond as you wish to bend over to form the hook. Hold it firmly on to the piece of separating file, prepared as directed, close up to the beveled part, with a pair of pin-vices, and with a knife-blade or any fine instrument the projecting point may be turned over so as to form a sharp angular hook. Now lay this on a small bench-anvil, and with a minute rivetting-hammer and a strong magnifying glass the hook may be flattened from the round form in which the emery-paper left it. By means of the magnifying glass and the Arkansas oil-stone slip, any little roundness may be reduced so as to form the

attenuated point into a sharp angular hook. To temper, lay a long drop of water on a piece of metal, holding this in the left hand very near the blaze of the spirit-lamp. Now hold the instrument in the blaze, and as soon as it is red-hot, (which, from its extreme attenuation, occurs almost as soon as it enters the blaze,) shove it into the water near by. To reduce to a blue or spring temper, heat a piece of metal and lay the hardened bristle on it; watch the color, and plunge it into the water, held near at hand, as soon as possible. The tempering is the most delicate part of the process.

An old barbed nerve-broach may be worked in the same way, and, when finished, mounted in a handle.—*Dental Office and Laboratory.*

ARTICLE VIII.

Treatment of Periostitis.

BY A. M. HOLMES, MORRISVILLE, N. Y.

I beg leave to call attention to the use of Gelsemium as an efficient remedy in the treatment of periostitis and other painful diseases of the teeth and surrounding tissues.

As a remedy for neuralgia and kindred diseases of 5th pair of nerves, it seems as nearly a specific as medical science provides for the cure of any disease.

I can refer to my personal experience in its use for treatment of that exceedingly painful affection of the face, combining the characteristics of neuralgia and rheumatism, called by Drs. Innan and Anstie, myalgia, resulting in prompt and absolute relief.

But my object now is to refer more particularly to its efficacy in the treatment of periostitis and other painful conditions of the teeth and surrounding tissues, with the assurance that my experience in its use has been far more satisfactory and successful than with the usual treatment adopted in such cases.

I recently prescribed this remedy in a case possessing the characteristic symptoms of exostosis of the root of an incisor, which had resisted other constitutional as well as local treatment. The remedy was taken in sufficient quantity to relieve the excruciating pain with which the patient was suffering at the time—requiring about 30 drops of Tilden & Co.'s extract of Jessamine in 5-drop doses half-hourly—which was followed with twelve to fifteen drops daily, on retiring, for four days, when all soreness had disappeared from the alveolus (the first time in months,) and the tooth has remained comparatively comfortable since, now more than 12 months.

Gelseminum (or yellow Jessamine) being a powerful nervous and arterial sedative, would seem to indicate it as an efficient remedy in the treatment of inflamed or sensitive dentine, where constitutional remedies are called into requisition, and in particular to prevent the dangerous effects of congestion in the pulps of teeth after resorting to capping.

My experience in the use of this remedy for the purposes indicated has proved so satisfactory to myself, and gratifying to my patients, that I take pleasure in calling attention to its use. As there is so great a difference in the extracts or preparations, and the remedy acts powerfully on the nervous system, care should be exercised in its use, and an exact knowledge of the strength of the preparation prescribed, as one drop of the stronger extracts often proves a sufficient dose.—*Dental Advertiser*.

ARTICLE IX.

Physiology of the Lymphatic System.

Dr. Z. C. McElroy, (*Buffalo Med. and Surg. Journal*), broaches a new theory with regard to the Physiology of the Lymphatic System, which is in substance that everything nature, "every special form of life, during life, or just before,

or in the act of death, so to speak, makes provision for its own perpetuation and multiplication." This, he asserts, is true of animal and vegetable life, and he concludes that by some analagous process each special structure, be it viscus or tissue, in the act of functional decay, "stores up" the force in the necessary material, to carry its own and the new material, with appropriate and necessary conditions, up to the forms of structure from whence it was derived.

"The Lymph System, by this conception, becomes the 'fountain of life.' For it is the egg's seed, or germs of the several structures of the body from which it is taken, or in which it is found or derived." And, according to this theory, the Lymphatic System will have a function corresponding with its anatomical extent and complexity of structure, viz: to "collect from the debris of the tissues the material in which the several structures have stored up the force for over reproduction from new material during the life of each individual. The old is, by this means, constantly assisted with the new material steadily going into living bodies, so that personal identity becomes intelligible. To repair the structures, as they are constantly and momentarily wasted, the supply of seed must be continuous to insure continuous reproduction." The theory has at all events the merit of novelty.

EDITORIAL, ETC.

Maryland and District of Columbia Dental Association.—The above Association held its Fourth Annual Meeting in Washington, last month. The work of the Association has been committed to Sections, each member thereby being able thus to

follow the bent of his own mind, year after year, of a single line of investigation. It is thought that good will result from this arrangement.

If it be not out of place, we would suggest to the Sections that original investigation is of all things most important, and is always interesting. A re-statement of the views of others is hardly what is wanted, nor is a resumé of what has been developed in this department or the other so much to be desired as some original examination of a question. It is, as they say in Germany, not so important to know what we have *acquired*, as what we have *done*; and it is only important to know what others have done as a means of guiding our own investigations, and aiding our own search after truth.

The desire which prompts some to speak on all subjects, is, beyond a doubt, in the way of the felicitous progress of the work of an Association. Impromptu remarks are not always pertinent. As well had one write for all the sections, or speak on all papers read from them; and reflections of the paper read might well be omitted.

This is written in no sense of intended harsh criticism of the proceedings of the above Association, which were in the main, harmonious, but in the hope that assistance may be given to deliberations which are more and more important from year to year, as the scientific aspect of dentistry is growing more apparent. Earnest thought and careful investigation, conducted in the light of science, are making some of the members of the dental profession marked as men of whose attainments any profession might well be proud; and it is doubtful if we are in a position or a condition to criticise them until we have pursued somewhat the same line of investigations which brought about these results.

The paper on the Morphology of the Blood, by Dr. E. Cutler, of Boston, was, of all those read, by far the most interesting. It deserves a close reading; and we are glad to read that its repetition in Baltimore was before a large audience. Dr. Cutler has been ably assisted by Dr. G. B. Harriman, a dentist of Boston, in these investigations. Dr. J. J. Caldwell, of Baltimore, also contributed largely to the success of the Association by the able paper on Anæsthesia, and on Alcoholism and Syphilis.

H.

OBITUARY.

Philip H. Austen, A. M., M. D., D. D. S., entered into his rest on the morning of October 28th, 1878, at his residence, No. 8 Cathedral Street, Baltimore City, in consequence of a burn received on the 1st inst. Professor Austen had for a long time previous to the accident which terminated so fatally, been in ill health, but was recovering somewhat from the most serious symptoms of his affection which was nervous in its character. Early in the morning of October 1st, Prof. Austen was aroused by a noise which caused him to suppose that burglars were in the house, and on going down stairs to inspect the lower rooms he made a mis-step, and the candle which he carried was brought in contact with his night dress. His lower limbs were immediately enveloped in flames, but with great presence of mind he hurriedly returned to his study and obtained a shawl which he remembered was there, and wrapping himself in it succeeded in extinguishing the flames without alarming his family. He was, however, seriously burned, and owing to his weak condition, the exhaustion resulting from his injuries was too great to be overcome by the great vitality and elasticity of spirits for which he was noted, and death occurred after some weeks of suffering.

Prof. Austen was a remarkable man, and one of the best informed on all general subjects. His talents were of the highest order, and his indomitable will and perseverance, together with his great intelligence and well stored mind, ensured success in all his literary undertakings. He was born in Baltimore City, in 1822, and graduated at Yale College when but 19 years of age. Two years later he graduated in Medicine at the University of Maryland School of Medicine, and practiced medicine in Baltimore City for about ten years. He then turned his attention to Dentistry, and graduated in the Baltimore College of Dental Surgery in 1849. In the same year he was appointed Lecturer on Chemistry and Metallurgy in his Alma Mater, and in 1852 was elected Professor of Dental Mechanism. This posi-

tion he very acceptably filled until 1860, when he was elected Professor of the Principles of Dental Science and Chemistry, and occupied this chair until 1875, when ill health and a determination to remove from the City and engage in active out-door business, compelled him to sever his long connection with the Baltimore College of Dental Surgery. He was also the Dean of this College from 1853 to 1865. After leaving the Baltimore College, he occupied the position of Civil Engineer in directing the working of the Preston County, West Virginia Coal and Iron Mines, of which he was part owner, and which, in consequence of his great ability, were called "The Austen Mines."

Prof. Austen while in West Virginia, was untiring in his charitable efforts to improve the condition of the people of the neighborhood in which he resided, and during a scourge of typhoid fever endeared himself to the sufferers by his constant attention and gratuitous medical services. As an author, Prof. Austen had considerable reputation, being the author of the translation of Jourdain's work on "Diseases and Surgical Operations of the Mouth." He also edited, in connection with Profs. Gorgas and Latimer, the last edition of "Harris' Principles and Practice of Dentistry," which is used as a text book in all of the reputable Dental Colleges. Prof. Austen was a consistent member of the Presbyterian Church, and leaves a family consisting of a wife and three daughters. To the education of his daughters he devoted a great deal of time and with the greatest success, as he was an accomplished scholar, and displayed a rare taste for literature and the ancient and modern languages.

While in dental practice, his attention was chiefly given to dental mechanism, in which he displayed the greatest skill, being second to no other practitioner, and his lectures on the same subject were replete with useful information and scientific details. He was a fluent speaker, and was always an interesting and instructive lecturer. He was also a prominent member of the Maryland Academy of Sciences.

Charles Knower, D. D. S., M. D., died in St. Louis, Mo., October 14th, 1878. Dr. Knower was a graduate of the Baltimore College of Dental Surgery, of the Class of 1859.

After receiving his dental degree, Dr. Knower commenced

practice in his native city, where he had been a student of Dr. Isaiah Forbes. He was a successful practitioner, and his memory is held in high estimation by all who knew him. While engaged in the practice of dentistry he studied medicine and received the Degree of Doctor of Medicine.

BIBLIOGRAPHICAL.

The Physician's Visiting List for 1879. Publishers—Lindsay & Blackiston, Philadelphia.

The Twenty-Eighth edition of this popular and useful appointment book is at hand, and is as attractive and interesting as ever. It makes a very admirable dental appointment book, and is of convenient size and arrangement.

Urethral Stricture. By Thos. R. Brown, M. D.

The author of this pamphlet is Professor of Clinical and Operative Surgery, and Diseases of the Genito-Urinary Organs, in the College of Physicians and Surgeons, of Baltimore, and full justice is done to the subject, rendering the paper an able essay.

The Intra-Venous Injection of Milk as a Substitute for the Transfusion of Blood. By T. Gaillaird Thomas, M. D., of New York. Publishers—D. Appleton, & Co., of New York.

This essay is illustrated by seven operations, and consists of an interesting account of a process which presents the possibility of saving life, by the introduction of healthy blood forming material into those suffering from sudden loss or gradual depreciation of the vital fluid.

MONTHLY SUMMARY.

Chloroform.—Rules for Administration.—Its Peculiarities Nationally.—Dr. M. F. Comes, (*American Med. Bi-Weekly*), thinks that the dangers from chloroform arise from an accumulation of it in the system, and that rapid administration of it is safest. Resistance to its inhalation may be overcome by pressure upwards and backwards on the ensiform cartilage. Irregularity in the respiration or circulation is more easily remedied if the system is not charged with the drug, as it is apt to be when administered slowly. Little attention need be paid to diseased conditions of the heart or lungs, but the pulse should be carefully watched; and it is a point of importance to have some previous knowledge of this indication as the part of the subject, as irregularity or intermittency of pulse is not unfrequent in persons enjoying good health, but marked irregularity while the anæsthetic is being administered is suspicious, and significant of danger. Sudden increase in frequency and corresponding diminution in volume is likewise alarming, but is a rare symptom. The face is a good index of the condition, and pallor, is suggestive of interference with a normal condition of affairs. [Pallor is indicative sometimes of nausea—see Chisholm on Chloroform. Eps.]

Dr. Comes thinks nationality has much to do with the susceptibility of individuals to anæsthetics, and classes the Irish as most difficult to subject to their influence; and in this respect they rank with Americans, who are strongly resistant also. Germans yield easily to chloroform, and the Negro most easily of all.

Young persons are much more susceptible to its influence than adults; extreme old age does not lessen this resistance, but debility does, and delicate persons yield more readily than robust constitutions.

[We add that nervous and excitable cases are difficult to manage, being brought under the influence of anæsthetics slowly, and with great resistance. The readiness with which children yield to chloroform is quite remarkable, and the promptness with which they rally is equally so. Knowledge of these facts should influence us in cases of painful extraction, when the little sufferer suffers equally from fear of the operation and operator. The administration of chloroform to a small child may be said to be almost absolutely devoid of danger.]

A Peculiar Mouth Affection.—Dr. Geo. Y. Hunter, of Bengal, describes a peculiar mouth affection which attacked the troops in India, which was characterized by slight elevation of fungiform and filiform papillæ, followed by stripping or peeling off of patches of epithelium chiefly in the middle of the dorsum of the tongue, with fissures in the direction of the muscular fibres; the whole mouth is sore, and the gums are blueish and ulcerated at the junction of the teeth; no pain is present, nor does the thermometer show general elevation of temperature, though there is a slight increase of heat locally. The pharynx and throat become involved as the disease progresses, with hoarseness and swelling in the sub-maxillary region. The disease reached its maximum of intensity in about a fortnight. The cause is attributed to a change to unaccustomed food.

Nitrite of Amyl and Chloroform as an Anæsthetic.—L. B. Balliet, M. D., in the *Med. and Surg. Reporter*, says:

In my practice of over twenty-four years I have, until recently, used chloroform as an-anæsthetic in all surgical cases and convulsions of children. The past six months, with the object of lessening the dangers of asphyxia by this powerful anæsthetic, I added to the ounce of chloroform sixteen drops of nitrite of amyl. The result thus far is apparently most satisfactory. Nevertheless, further careful tests are needed to fully confirm my views of this combination as a safe anæsthetic. I therefore ask surgeons to give this a fair trial, and report their experiences in regard to its action on the heart, respiration and circulation, and compare it carefully with the symptoms produced when chloroform alone is used. I shall still continue the use of this compound anæsthetic, but may vary the proportions of the nitrite of amyl in particular cases.

The Bael as an Astringent.—This Indian drug is rising in popularity in England. The tree of which the bael is the fruit grows to a large size, and is sacred to Siva. The fruit, the size of an orange, contains an aromatic essential oil, with pungent and astringent substances. It is employed especially as a carminative, as an astringent, and an aperient in constipation, being given especially in dysentery, diarrhœa, and indigestion; in the latter to regulate the bowels. In the later stage of dysentery, when diarrhœa, simple or dysenteric, continues with exhaustion, Sir Joseph Fayrer especially recommends it. It has been occasionally given in this country, and a formula exists in the British Pharmacopœia for the preparation of a liquid extract, but the value of this preparation is regarded as somewhat doubtful. In India it is frequently given in the form of sherbet or marmalade. —*Med. and Surg. Reporter.*

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ARTICLE I.

Maryland and District of Columbia Dental Association.
(Continued.)

[Reported for this Journal.]

At the conclusion of the reading of the report of the Section on Anæsthesia, the subject was discussed by Dr. Turnbull, of Philadelphia, who said that he was present more as a listener than as a debater, and he felt after the reading of the exhaustive essay that those present knew probably more about the subject than himself. Still he would say a word. He viewed with amazement the statistics of Prof. Chisolm. He did not question his authority. His thousands of cases and no deaths had the air of authority, and his summary of only twelve deaths from chloroform he had no doubt, was honestly avowed. But it so happened that in our own land alone there were a great many more deaths than this. It is only recently that cases have been published. So far there was no official record of cases of deaths in the Army or Navy of the U. S. The

truth is we are loth, as surgeons, to tell the deaths from Anæsthetics—we are slow to say that people die of chloroform. 210 deaths were reported in "Eely's *Medical News and Library*" alone, and the current reports show that in 1869, there were 21 deaths from chloroform, in 1870, 9 deaths; in 1871, 10 deaths; in 1872, 15 deaths; in 1873, 14 deaths; in 1874, 9 deaths; in 1875, 5 deaths; in 1876, 4 or 5 deaths; in 1877, 6 deaths; in 1878, 4 deaths; and yet in the face of these figures, surgeons say chloroform is safe!

Dr. Hunter McGuire had boasted that he had never had an accident, but only very lately he saw it reported that even he had had a fatal casualty.

He discussed the action of Nitrate of Amyl, and thought its action on the heart was secondary. The action of chloroform on an eel in water, showed that it would produce death. If it were given as an anæsthetic, it should be very largely diluted; at least 96 parts of air. There was an accumulation of the anæsthetic in the system, which was dangerous. He considered it specially contra-indicated in kidney disease. Where chloroform and ether were mixed, it should be in the proportion of one part of chloroform to three of ether, by *weight*. Of course it would be impossible to give pure ether vapor, though the mouth should be closely covered. Some air will get in. As to the action of these agents on the blood, it was a matter of doubt if it were understood. Some modification of protoplasm was no doubt made, and their effects on muscular tissue peculiar. Chloroform coagulates albumen, and coagulated albumen cannot be restored. This is a fact which should caution us in its use. In extremely hot countries it was necessary to use it on account of the low boiling point of ether. With regard to the theories of Dr. Waterman, as to the changes seen in blood in the spectroscopic analysis, he thought they were not well founded, and no change of the grave sort had been seen under the microscope. He thought the chemists who made the Nitrate of Ammonia were not re-

liable always, and he was informed by a person who had great reputation for the purity and success of the gas he used, that he had great trouble in obtaining a pure article of the salt from which the gas is generated. This informant stated that he based his success on generating a pure article of gas, and of always having it fresh, and never administering it until it had stood at least seven hours, and never using it when more than a few weeks old. The only catastrophe he had heard of was the swallowing of a cork put between the patient's teeth, which got into the trachea and produced death. The action of Nitrous Oxide seems first a shock, and then flushes the face, and then produces muscular contraction. The few cases of death set down to its use were so slight as to be almost nothing.

As to ether, the statistics in this country and in England were unequal as to the ratio of deaths. In England in 1876-7 there were 18 deaths from its use, while in America during the same period there were only 3 or 4 with us. We were careful to use a pure article, while in England the drug was often adulterated or impure. He was understood to say that ether was alcohol minus water, the effect of the Sulphuric Acid used in its manufacture being to remove the water.

Dr. Atkinson asked, but did not get a satisfactory reply as to this statement respecting ether. Water, he said was used to purify the ether and to wash it—and if it had any affinity for that fluid, it would surely show it.

Adjourned.

AFTERNOON.

Dr. Turnbull further discussed the question of anæsthesia, and of nitrous oxide gas, expressing himself in favor of the condensed gas as manufactured more uniformly and as not deteriorating with age. Prof. Barker had showed the injurious effects of this gas years ago; and it was also demonstrated that the old gas of the gasometers was inoperative. In Philadelphia, most of the gas is given by one man, and most of those who need extracting done by its use, patronize one dentist.

Dr. Ten Eyck, of Washington, D. C., said that when in Philadelphia, he had visited the office of the dentist in question, (Dr. Thomas,) and he had informed him that he did not consider gas fit to inhale after two days. He had given it to 185,000 persons, never refusing except in two cases, both of whom died a few days after he had declined to serve them. The impurities in the gas as ordinarily made, he inferred were produced by the impurity of the Nitrate of Ammonia.

Prof. Hodgkin said, that when gas was first introduced he had used it somewhat freely, with no observable bad effects, but that since the paper of Dr. Waterman had been published he had felt uneasy for fear he had unwittingly hurried some of his patients on their road over the river. He did not give gas now, mainly because there seemed to be but little demand for it, and partly on account of the trouble of it. As to the fact alleged that the gas could not be kept more than 48 hours, he did not believe it, as all who know anything about it, know that it is one of the most stable of the gaseous compounds; and he was sure that the only deterioration it could suffer, would be the dilution with air, passing through the water of the gasometer. He would say while he was up, that interested in the subject as a journalist, he had sent out a great many circulars to physicians, and had an appeal widely published, asking for information as to these after effects of nitrous oxide gas, and requesting any physician who might have noticed any such injurious effects to communicate them. But one response—that one eulogistic of the gas—had been received, which would hardly have been the case if the effects had been so deleterious as alleged by Dr. Waterman in his paper.

Dr. J. J. Caldwell, of Baltimore, said that he was an M. D., and knew but little about the subject of gas. He thought, however, that the dentists were the only men to note the effects, if any injury was done. The physician would probably not have his attention excited in that di-

rection of enquiry. He thought that Waterman's enthusiasm had carried him rather beyond the bounds of reason. He did not believe in this "death lime" which his friend Waterman saw in the spectroscope. Still, no anæsthesia is safe. Any such condition is a step toward death, which we should hesitate to take. He did not believe that change in protoplasm could be detected after death; but we must see how dangerous is the condition of one with weak heart and lungs, and with the spinal cord overwhelmed with anæsthesia. The sympathetic is left to carry on life of itself, and if it is feeble, what is to keep up the life? Who knows anything of the pathology of the sympathetic? But if, as the report of the section says, the two legs of the tripod of Bichat are taken away, what has the vital powers left to lean on? We are indeed gravely simulating death, which is too apt to prove a ghastly reality on our hands.

Dr. R. F. Hunt, of Washington, D. C., asked for information as to the specific effect of the mixture of two kinds of anæsthetics, as ether and chloroform,—as for example when ether is given for awhile and then laid aside and the other given? He cited the analogy between the effect of single acids on metal and their combination, and the well-known effects of "mixed drinks" in producing a more formidable intoxication than could be brought about by single fluids of the sort. He thought that carefully conducted experiments ought to be made to determine these points.

Dr. Turnbull replied that so far as was known, on mixing two parts of chloroform with one part of ether, a chemical change was produced, there was a condensation of the liquids and a new chemical compound. In all administrations of this drug it was considered important that whoever gave the ether should do nothing else. The vapor was heavy and fell to the floor, and being inflammable should never be used where there was a light, or near a fire. Hydro-bromic ether was an excellent anæsthetic, but was costly. It was worth \$4 per pound.

Dr. Caldwell. Babies take chloroform as they do milk; it seems not to injure them at all. He spoke of the great importance of electricity in case of trouble from an anæsthetic. He thought that we have in a battery a swift and direct remedy. When at the lowest ebb of life, the current may be applied, and life saved. He cited the case of a boy who had all the help in anæsthesia he could have—Squibbs, Sims, Sayer, were present, but fatal symptoms came on and he succumbed. Had a battery been on hand, he might have been saved.

Dr. E. Cutter, of Boston, exhibited an exceedingly simple and ingenious apparatus for the resuscitation of apparently drowned people. It consisted simply of two open cans fitting very loosely, one into the other, the inner one with a projecting pipe for the attachment of an india-rubber hose. The whole affair not unlike an ordinary gasometer for nitrous oxide gas on a small scale. The outer tank could be dispensed with, if the asphyxiated person were at the water side, and the small or inner tank plunged into the river, lake or body of water from which the body had been rescued.

Dr. Turnbull, in reply to a question as to what he thought of the method proposed by Dr. M. H. Webb, of rapid breathing as an anæsthetic, said it was one of a train of nervous phenomena akin to the "metallic tractors" of former days.

Dr. Cutter gave his method for inhaling ether. It was to spread a towel over the face and drop the drug upon this. Very little was sufficient to produce the effect. Death is caused in such cases from the retention of carbonic acid in the lungs. The simple apparatus he presented would remove this and supply pure air.

Dr. Coy, of Baltimore, thought the condensed gas purer than that ordinarily made in the dentists' office. He thought much of the quiet conduct to be desired on the part of the patient was to be brought about by being quiet and cool ourselves. Any excitement or emotion on our

part would be sure to be communicated to the patient. He always gave along with the chloroform, plenty of air at first, and insisted on the horizontal position. Occasionally it might be seen from the behavior of the patient that the chloroform was not acting well, in which case he substituted ether. He did not consider this following of drugs, one by the other, was equivalent to mixing them. And he sometimes found it best to reverse the procedure, and give chloroform after the ether. He thought that anæsthetics did not lower the tone of the system as much as did the surgical shock.

Dr. Atkinson placed himself on the record by declaring chloroform to be satan's prime minister, especially among progeny; and nitrate oxide gas ranked next. He criticised the theory of Dr. Cutter, as to asphyxia from drowning, and claimed that the lungs were not empty, as claimed, but that the air was then fast locked, and that under no circumstances could more than four per cent. of the oxygen contained in the respired air be used up by the lungs, the rest being rendered unfit for use. He characterized this discussion as that of men full of the confidence of ignorance,—a set of asses in council. "Anæsthesia is privity of oxygen."

Dr. Cutter took exception to this, and contended that if this were true then C O₂ would be a true anæsthetic.

Dr. Turnbull argued that C O₂ would produce local anæsthesia, and that carcinomatous masses had been removed whilst the patient was under its influence.

Dr. Caldwell. We do have anæsthesia from carbonic acid gas. This was known long ago, and it has been for years in France a popular method of suicide. We need not know, as seems to be insisted upon by some, what anæsthesia is, before we have anæsthetics. But it cannot be that it is privity of oxygen, for we have this condition with abundant access of air, and with respiration unimpeded.

After further discussion the subject was passed,

On motion of Dr. H. H. Keech, of Baltimore, Thomas

Morrow, of that city, was appointed the State student to the Maryland Dental College.

Adjourned.

THIRD DAY.—MORNING.

After some routine business, on motion of Dr. Hunt, of Washington, D. C., so much of the annual address of the President of the Association, as related to the subject of the Goodyear Dental Vulcanite Company, and their suits against the dentists, was referred to a special committee; Drs. Winder, Smithe and H. H. Keech, being appointed as the committee.

The report of the Section on Pathology and Therapeutics was read. It embraced a paper by Dr. Caldwell, on alcoholism and another on syphilis.

A recess was then taken and the canvassing of subscriptions to aid Dr. Hunt in the prosecution of the rubber suits was carried on, Dr. Winder and others setting forth the claims of Dr. Hunt to the favorable consideration of the association, he having given all his time and means to the furtherance of these matters, and had labored as few men would have done. Dr. Winder gave a summary of the condition of the suit, and a resumé of the evidence so far collected, which it was now designed to print.

On motion of Dr. Waters, it was resolved that all papers read before the Association be considered the property of the Association; and that any paper presented and read here, and afterwards published by the writer previously to its appearance in the published proceedings of the society, shall not be printed in such proceedings.

A discussion followed, in which it was elicited that the Association did not object to having an abstract made of the proceedings, but that they rather desired this.

The subject of Pathology and Therapeutics was passed, and Artificial Dentistry taken up.

Dr. W. W. Evans read the report of the Section. The ground taken in the paper was that the idea that operative dentistry alone was necessary to success was a fatal error,

that students should be urged to study dental art. In this the Colleges are at fault, not developing this branch of the profession as it should be, and as it deserves.

The report was discussed by Dr. Hunt, who thought that Artificial Dentistry ought to be viewed in an æsthetic light, and placed in the same plane with operative dentistry. It was sadly neglected of late years and had retrograded. It was the duty of the profession to stimulate the manufacturers of porcelain teeth to improvement in naturalness; in their productions with the millions of teeth on hand, it is really difficult to get good cases. The teeth made are so little like nature. No part of our art had sunk so low, and was so degraded as this.

Dr. Noble thought that a higher degree of talent was required for this branch of dentistry than was generally supposed. Its difficulty and the taste and knowledge required was not generally recognized. Many of those wearing artificial teeth are simply disfigured by them.

Dr. R. B. Donaldson, of Washington, said that one thing was absolutely necessary, before the advancement spoken of as so desirable could be made—the education of the public in matters of this sort. The mass of those requiring artificial teeth had not the slightest appreciation of the merits of the subject, and fell into the hands of any who chose to impose on them. In the main this trouble rests with the public. People will not pay for a proper denture. Qualified dentists, who have qualified themselves by long years of careful study and close attention cannot and will not enter into competition with the cheap men. For himself he had carved and baked his own teeth for the first fifteen years of his practice, and his income from this branch alone had ranged from \$6,000 to \$7,000 a year. But during the past three years it had not amounted to \$600 a year. People will not pay his charges for artistic work, and go elsewhere; and so the work of supplying artificial teeth to those who require them, falls into incompetent hands.

Dr. Coy said that the old operators in order to color

teeth properly and understand shades, studied this subject from human models—studied the effects of light upon tooth structure in the mouth; the effects of gas light, &c. Often a tooth which appeared all right by daylight was seen to be out of place in shade at night. We should study the shade accompanying temperaments, the associated color of hair and complexion. He could seldom get selections made for him; and the fact that when he did go to the dental depot to select teeth, he found there boys and even colored servants selecting teeth for the dentist, showed how little appreciation some men had of the subject under discussion. Some of this fault—the degraded condition of this branch of dentistry—is ours, in taking work at too low figures.

Subject passed. Adjourned.

AFTERNOON.

The first subject in order was the election of officers for the ensuing year which resulted as follows:

President.—J. Curtiss Smithe, D. C.

Vice President.—M. W. Foster, Baltimore.

Recording Secretary.—H. M. Schooley, D. C.

Corresponding Secretary.—R. B. Winder, Baltimore.

Reporting Secretary.—T. S. Waters, Baltimore.

Treasurer.—H. B. Noble, D. C.

Executive Committee.—Drs. R. B. Winder, Chairman; and B. F. Coy, Baltimore, H. C. Thompson, D. C.

Publication Committee.—H. M. Schooley, Chairman; and J. B. Ten Eyck, D. C.

Votes of thanks were passed to Rev. Dr. Elliot, and Drs. Turnbull and Cutter, for their presence and aid.

The report of the Section on Dental Education and Literature was read by Dr. Noble. It referred to the accidental origin of the oldest Dental College in the World, resulting from the refusal of the medical fraternity to offer opportunities for study of this branch of surgery and medicine, also to one of the youngest of the schools, the Maryland Dental College, which seeks thoroughness in preparation on the part of her graduates, carefully guarding against

the graduation of any who are not fully qualified. The paper referred to a hope for the future union of these two institutions—the Baltimore College of Dental Surgery and the Maryland Dental College. The question of the final examination of students was discussed, and some suggestions made as to improvement in the methods of examination, and also in the appointment of professors. One method had been suggested, viz: that the State Societies elect men to fill vacancies, and another plan that the alumni nominate persons to fill such chairs. The opinion was expressed that the colleges could not do this work well unless free from their present poverty, and endowments were absolutely necessary; teaching in most of the schools bring a labor of love. The proposition that dental schools should be broken up in favor of medical schools was wrong, and should not be listened to. The universities had established dental schools, and the improvement of the opportunity for an advanced standard was anxiously looked for.

The subject was briefly discussed by Drs. Hunt, Donaldson, and others, and the regret expressed that it had not been brought up earlier in the session,—and then passed.

The installation of officers followed, and the Association adjourned to meet in Baltimore in 1879.

ARTICLE II.

“Plastic Filling” as a “Power” in Dentistry.

BY J. FOSTER FLAGG, D. D. S.

Read before the American Dental Association, August, 1878.

MR. PRESIDENT AND GENTLEMEN:

As the result of more than thirty years' experience in the practice of dentistry, I find myself in the front ranks as an ardent, earnest, conscientious advocate for the use of “plastic” materials for filling teeth.

As the chosen enunciator of the “basal principles of the

New Departure," I spoke on behalf of my friends, Drs. Palmer and Chase, at the last November meeting of the New York Odontological Society.

I spoke then for "basal principles," which should so govern practice as that a great advance might be made in the *saving of teeth* over that, which you all know has resulted from the practice of the past.

I recognize as well as you do the high appreciation which the whole world extends to American dentistry.

I recognize as well as you do the wonderful manipulative skill of our "best operators."

I recognize as well as you do the vast amount of good which has been done to the community and the world by all this hearty effort, but I also recognize that *in despite of it* our people are *semi-edentulous*, and that the whole civilized world is flooded with *artificial dentures*. Dentures on celluloid, dentures on rubber, dentures on silver, and dentures on gold, dentures on porcelain, and dentures on platinum, dentures on everything except the roots which God designed for their support.

It is too much for me to claim that this result is due largely to the teaching that *gold* is the *best* material with which to *save teeth*?

Gentlemen, my plans for life (if life is spared) are such as that it is most probable that many years will pass before I meet with you again, if ever, and I therefore desire the more to leave with you that which I have brought, most solidly, most clearly, and with the utmost kindness.

To those of you who differ with me most entirely, I ask that you will *permit* an honest difference of opinion; that you will accord to me sincerity of purpose, and that while you combat *my views* to the utmost, you will not expend any strength in *personal* antagonism.

I am nothing in this; I merely advocate principles and practices which must stand or fall solely upon their own merits.

If I can say to you that the practice which I advocate is

eminently successful, and you have no *reasonable cause* for discrediting my assertion, it is your *duty* to your patients and your profession that you examine well its workings, and make yourself so conversant with its minutiae as to be *fitted* to express opinions, rather than be content to pass it by in wholesale condemnation.

If I can say to you that with the gradual abandonment of gold, I have *also* equally come to the abandonment of artificial dentures, it behooves you to look to it and *see* the connection which exists, if there be any, between the two.

Is gold the easiest material with which to fill? Is it not the most difficult?

Is gold the quickest material with which to fill? It is not the greatest consumer of time?

Is gold the most comfortable material with which to fill? Is its use not usually attended with more discomfort than any other filling?

Is gold the most economical material with which to fill? Is it not, by far, the most expensive?

Is gold the most durable material with which to fill?

I ask you, gentlemen, is it *possible* that your experience is so adverse to mine as that you can say that in the teeth which *most need* saving, gold is the most *durable* of all your fillings?

Then, if gold is the most *difficult*, the most *tedious*, the most *uncomfortable*, the most *expensive*, and *not the most durable* material with which to fill teeth, is it not a *reasonable* deduction that its almost exclusive use, and its constant adulation, its upholding as the *test* for dental ability, and its universal acceptance as the *best* of filling materials, has *much* to do with all this flood of pulpless teeth, of alveolar abscesses, discolored crowns and jagged roots, of toothless jaws and plates of india-rubber?

I put this *strong*, gentlemen, that you may see how it looks to, at least, one of you; that you may be led to think that *if it can* so look to anyone, perhaps it may be worth your while to make examination of that which seems *at first* absurd.

I tell you my patients do not think that it is *absurd*.

I assure you those that have had decades of years of past experience are loud mouthed in confirmation of what I say to you.

Hundreds of patients have been for years' comparing notes with the results in months of friends, and their testimony corroborates my own experience.

Hundreds of patients who have tried for years "accepted dentistry," regardless of time, suffering, and expense, and who now for years have tried the dentistry which I advocate before you, have not words sufficiently expressive of their condemnation of the former, or of their satisfaction with the latter.

It is not I alone who can tell you this ; my office has been no "closed *sanctum*." Its door has ever been open, and many, I am happy to say, have brightened my rooms with the light of their faces.

They have both *seen* and *heard* this that I claim for our "New Departure" practice. I have plenty of words and letters which assure me of the great modifications in practice which have grown out of these visits.

If all of you do not know me well enough to feel assured that I tell you of these things *because* I feel that I should be derelict in my duty to my profession and to you were I not to do it, I am happy in the conviction that some, *and indeed many* of you, do me the justice to believe this.

I desire that you shall know of these *possibilities*. I desire to have no *secrets*. I desire to have the privilege of saying to you that I practice from an entirely different stand-point from that which, up to this time, has been given by text-books and colleges.

I desire to tell you of the *comfort* which comes from this practice, both to patient and operator.

I desire to tell you of the *ease* with which apparently insurmountable dental difficulties are overcome.

I desire to tell you of the *satisfaction* with which each year's successes are added to those of all the previous years.

I desire to tell you of the feeling of proper pride—aye! *thankfulness*—with which I see the years roll on, while arches by the hundreds remain unbroken.

I desire to tell you how *economically* all this is done; how promptly and willingly bills are paid; and how frequently words of good cheer and commendation accompany “checks” for services rendered.

But, gentlemen, I desire, above all, to say to you that I attribute all this mainly to the use of “plastic filling.”

I wish to say to you, at this time, that with the practice which some of you *know* I have, and with the character of practice which you may, all of you, *infer* I have, and in a city which has just claim to rank high as proficient in dentistry, I have not used one sheet of gold foil for almost two years, and have sailed for the past seven months with “no gold used” in capital letters upon my appointment cards.

I wish to say this *openly*, for the comfort and support of those who desire to *use* plastic filling materials.

Gentlemen say that our promulgation of such practice will lead to wholesale, unworthy use of plastic filling.

That is no affair either of ours or theirs. Let them learn to use them *worthily*, and thus *by example*, rather than precept, show our erring brothers the error of their ways.

But while I advocate thus strongly the use of *plastic filling materials*, and while I state to you that I have completely abandoned gold, I wish you distinctly to understand that this practice is not now, *and never has been*, advocated by the “New Departure.”

In the presentation of our desires, it was expressly stated just what kinds of teeth should be filled with gold, and just what kinds of teeth should be filled with plastic fillings.

This having been misstated and misrepresented, the assertion is now made that what we desire is no “New Departure,” but is just what has long been practiced as “eclectic dentistry.”

Now this is just as far from truth as were the first misstatements.

That plastic filling materials have been used in a sort of clandestine manner, and as desperate "last resorts," we admit.

That their employment was generally regarded as *derogatory* to "first-class" ideas, and that the fillings were stamped as "second-class," we contend.

And we insist that while even *excellent* practitioners admitted that they occasionally employed gutta percha, oxy-chlorides of zinc, and even amalgam, there were still some who asserted that they "never used anything but gold," and who from this claimed a *superiority*, which by the members of the profession at large was tacitly accorded them.

In contradistinction to all this,—in marked deviation from all this,—we desire that a "New departure" practice shall recognize that, for certain *definite* kinds of teeth, and for cavities in certain *definite* places, for which at present gold is regarded as, and stated to be, "the best," other materials than gold are *better* than gold; that they will preserve teeth better, and that *therefore* gold is *not entitled* to the broad credit of being the "best" material for filling teeth.

We wish it to be understood by the profession, and secondarily by the community, that, even if gold is the "best" material for the *hard, strong teeth* and the easy places, it has to take a *subordinate* position when the *soft* teeth and the *dreadfully difficult* and inaccessible places are marched to the front, for that *gold* is not then our best weapon for defense.

And more than this, we insist upon it that just in proportion as teeth are more and more in need of a *preserver*, so does gold *less and less* meet the requirements, and this *too* even in the hands of the *skilled few* who cannot care for the one-thousandth part of the teeth that need saving.

Our "basal principles," we think, must become "accepted." Gold must be known and recognized as not the best in many, many cases.

The mere fact of "leakage" must be *known* to be not *necessarily* detrimental.

It must be *known* and acknowledged, that while "leakage" is *fatal* to the integrity of a good filling, it is not practically detrimental to one of gutta-percha, while again it, in some instances, is the very thing which effectually arrests decay under fillings of tin and of amalgam, thus causing them to preserve, for a long lifetime the teeth which are so soon lost in ordinary practice with the use of gold.

Compatibility of filling material with tooth-bone must be *known* to be the great foundation-stone for the successful saving of the teeth, and such splendid materials as gutta-percha, amalgam and the zinc plastics must *not* be taught to the *rising generation* of operators as "temporary," "vile," "worthless," and "ruinous to teeth," and their employment as "tending to *degrade dentistry!*"

And now, gentlemen, I wish to call to your notice what a "power" this plastic filling has become in dentistry.

It is *even now* a very well worked-up *specialty* of our profession; one that is so little known as scarcely to be mentioned except with contempt or disapprobation from the *lecture-stand*, and yet, one which can now take any denture so forlorn as to be hopelessly abandoned by the best gold operator in the world, and make of it a comfortable, satisfactory and beautiful success.

This is a marvelous claim, but those of you who best know my record will not for a moment think that I would say anything which I could not substantiate.

I have been doing this for years; it is now nearly ten years since I passed the "half-way" station at which I filled fifty *per cent.* of all my cavities with "plastic fillings;" as I have told you, it is now almost two years since I have used any gold, and during all this time the "hardest" kind of practice, in the shape of the "softest" kinds of teeth, has been aggregating apace.

I have, to the full, those "very soft teeth which" (as a member of the New York Odontological Society lately said). "we all dislike to see at the very first sitting," and there is no such feeling engendered by their presence. It is only a

source of satisfaction, as I inform the patients of the ease and comfort which I can give them in place of the pain, discomfort, and dissatisfaction which they have before experienced.

It is only a source of increased incentive, as year after year demonstrates to them, as well as to me, the strength of my position; and the constant and frequent recurrence of such remarks as, "How different this is from what it used to be!" "How long it is since I have lost a tooth!" "How glad I am I learned of this!" and such outcroppings of gratitude and satisfaction, lighten my labors, make me thankful for the instrumentalities which enable me to bestow such blessings, and cause me to wonder if it *can be* that it will be *long yet* before hundreds will be *educated* to leap joyfully over the long road which I have so slowly traveled.

And such a practice as this I tell you of is spoken lightly of—yes, worse than lightly—by the last guard of "accepted dentistry,"—men who know nothing of our work, who know nothing of our operations, who know nothing of our tooth-saving, beauty-making, comfort-giving, permanent combinations of our plastic fillings; men who know nothing of the proportions, or even of the components of our materials, who do not even know their names! much less their qualities or modes of working; who would not know their proper uses or their proper using if they were given them; and yet these men condemn it all, and in no measured terms, and thus *teach dentistry!*

Until quite recently (!) scarcely any one has claimed to use amalgam *much*, and yet, for many years, the steady increase of demand has been supplied by Townsend's, Walker's, Ash's, Lawrence's, Smale's, Arrington's, Moffitt's, Ashmead's, Hood & Reynold's, Holmes's, Diamond, Luther's, Sullivan's, Fletcher's, Welch's, Davis's, Dunlevy's, Chicago (Gold and Platina,) Weston's (S. S. White's,) Standard (Eckfeldt & Du Bois's,) "Best" (Spencer & Crocker's,) Stannous Gold ("O. P." Chase's,) Sterling (Davis & Ley-

den's,) Extra (Johnson & Lund's,) and Hardinan's of Muscatine, Iowa; and these alloys, so far from being "*all the same*," are composed, some of two metals, some of three metals, some of four metals and some of five metals; each has certain individual characteristics; each has its rapidity or its slowness of "setting;" each has its grade of shrinkage, though some say "no shrinkage;" each has its grade of edge strength, its liability to discoloration, its extent of bulging, and its value as a filling material for saving teeth. All this should be recognized by the professors of operative dentistry, and all the facts in regard to each should be taught as a part of dental education; for amalgam will save, for it has saved, many a tooth that had been tried by the best operators unsuccessfully with gold.

For gutta-perchas we have, for red, selected "base plate," and for white, we have Hill's, Bevan's, Jacob's, Codman's, Johnston's, White's, George's, Johnson & Lund's, Caulk's, and many others of lesser note; each of these has its rank, its heat test, its appropriate place, its proper method of manipulation, and, as these are known, its value.

For oxychlorides we have Sorel's, as the first, and type of all, followed by Metcalf's, Pearson's, Houghton's, Roberts's, Kellnitz's, Smith's, Fletcher's, Poulson's. Worff's, Cement Plombe, Rock Cement, Guttensohn, Franzelius's, Crystalline, German Cement, Agate Cement, Acme Cement, Ludwig's, and Foundation.

Then we have the oxysulphates, which are mixed with mucilage or clear water, are non-irritating, and used for protecting pulps; and finally, the oxyphosphates, of which we have already some eight varieties, the most notable of which are Poulson's (six shades,) Grass & Worff's "Zinc Pyrophosphate," and Jiletti's "Piro-osseina" and "Piro-maltina."

Is there not a host of them? and do you suppose that gentlemen who have but infrequently used any of them know all about all of them? I think not!

Every kind of "plastic filling material" has its own decided peculiarities of manipulation, during which it is found necessary to employ for explanation and comparison of views such terms as "weighing, rubbing, mixing, washing, heating, setting, tapping, trimming, bulging, talcking, cold-soldering, capping, guarding, softening, lining, pelleting, whitening, wafering, buffering, domeing, facing," and the like,—terms, each of which conveys to the mind of the plastic-filler the idea of some definite process, action of material, manipulative result or specific means for the accomplishment of some desired end.

So far from all this being "*guess work*," we have a range of "tests" which tell us very well what we may expect of any material under given conditions. These are such as strength tests, edge test, setting test, shrinkage test, expansion test, color test, heat tests (wet and dry,) leakage test, froting test (for probable wear,) acid test, alkali test, conduction test (electrical and thermal,) and, finally, the oral test, which decides the compatibility of materials with tooth-bone and their behavior in the oral fluids and under oral influences.

By means of these tests we are enabled to make a choice of material to meet the varied indications that constantly present in practice, which, to our apprehension, approaches to something like science.

It is by these means that we frequently combine two, three, four, or more different materials in the filling of one cavity, each of which best subserves its purpose in its appropriate position, and insures an operation which for comfort, beauty, and permanency can in no other way be equaled.

It is a source of no little satisfaction to me that I can say that my office has been an open "clinic room" for many years; students of a week, graduates of a year, and venerable practitioners of almost half a century's experience, have been alike welcome, and have seemed alike satisfied. They have each left their contribution to my store for dissemination, and they have each told me that they took

away, in return, something which compensated them for their visit.

It has always been a pleasure to me to answer notes of inquiry, and when in my power, to give the desired information.

My relations with the class, as incumbent of the chair of Dental Pathology, were of an exceedingly pleasant nature, warning frequently into close personal friendship. I have enjoyed an intimacy with men in our profession which has made me feel that it *must* of necessity include some of the choicest distillations of humanity ; and it is, therefore, with no ordinary feelings that I have come to this meeting, bringing with me the conviction that it must be "for years, and it may be forever," that our *associate relations* will be severed. I feel that, *professionally*, my *associate life-work* has been done. I feel that it has been vouchsafed to me to open before you a professional pathway which is one of success, relief, and compensation to *you*, and of great comfort and satisfaction to your *patients*. I feel that in its pursuance you can, as I have done, practically ignore mechanical dentistry,—that boon, that almost priceless blessing, to those who require it ; but how much better *not to require it !* With the same energy that has been expended upon "gold" directed in the channel of "plastic filling," the children of our children should view an artificial denture as a curiosity. My patients have no knowledge of them. Why should yours have ?

But to accomplish this you have a big field to plow ; it has to be harrowed, planted, and cultivated ; by these means *only* can you secure a crop. But the harvest is worthy all the labor you can give. It makes of dentistry a *blessing* to the patients, and a *luxury* to its practitioners. I *know*, gentlemen, *because I have it so !* I have faith to believe that it will be given to you, and that you will find it so, and in that faith *I leave it with you.*—*Cosmos.*

ARTICLE III.

Nævus, or the Effects of Dental Operations upon the Female during the Period of Utero-Gestation.

BY DR. E. S. OHISHOLM, TUSCALOOSA, ALA.

Owing to a case of harelip malformation and fissure of the gum of a newly born infant, resulting, as I suppose, from the filling of a tooth for the mother while pregnant, I decided to offer a few thoughts upon diagnosis, or rather the importance of correct diagnosis of those diseases and sympathetic affections incident to pregnancy.

The word, diagnose, is derived from the Greek, signifying, "I know," and is that part of medicine whose object is the discrimination of disease, the knowledge of the pathognomonic signs of each, and as Dunglison says, "is one of the most important branches of general pathology."

As this subject affords such a wide field of reflection and study, I will confine my essay to the discussion of but one of its branches; the diagnosis of those diseases and sympathetic affections that accompany pregnancy, and then offer some suggestions as to our duties as dentists toward the pregnant female who applies to us for relief from some of the many ills to which she has fallen heir.

I have often been asked why it is that diseases of the uterus are so much more common now than in former times, and you will occasionally meet with good old grandmothers who will shrewdly remark, "Why, Doctor, when I was young I never heard of ladies having these complaints, what is the reason we hear so much of them now?" This question is readily answered. It is not a necessary sequitur that because diseases of the uterus were not recognized they did not exist. These affections, although no doubt much enhanced by the increasing neglect of the general ordinances of health, are of no recent date, but on the contrary have formed their part in the catalogue of human suffering and death from the earliest periods of creation.

The machinery of the physical world and the revolutions of the sun were no less perfect thousands of years ago than they are at present, yet how profoundly ignorant was man of their true nature; how inadequate to explain what then appeared to him mysteries beyond the ken of human intelligence. But these mysteries have now become universal truths; they have yielded to the progress of science, are perfectly understood, and constitute the every day lessons of the school room.

The ample means, therefore, which we now possess of investigating uterine disorders, and the comparative facility with which the true nature of these diseases is arrived at, give to this class of maladies an identity which formerly did not belong to them; and hence, what in the remote periods of the science of physic were regarded as idiopathic affections of the head, chest, abdomen, etc., are now recognized to be symptomatic disturbances, or mere effects of disease in the uterine organs.

The object proper of this paper is to impress strongly upon the minds of our junior members particularly, the importance of a thorough course of study of this important subject. We should be prepared to diagnose most of the cases that come before us, and I assure you my young brethren, that the pregnant female will often become your patient, for toothache, one of the most prominent symptoms of pregnancy, will cause her to apply to you for relief. And when she does come, then it is, you should have in store all the information that can be gathered on the subject. You should be able to decide intelligently whether the toothache be a disease or a symptom. The examination should be conducted in that chaste and delicate manner that should characterize a gentleman dentist, but nevertheless the examination should be made. No hasty conclusions should be jumped at, but we should have such command of the subject that we may know where to begin and where to end, and not tire our patient with useless repetitions. There should be no display of instruments, no offensive

odors in our offices ; no skulls or unsightly objects of any kind, for the extreme impressibility of the nervous system of our patient teaches us the necessity of preventing them from witnessing scenes that are in any way repulsive to them, for although no injury may thereby be done to the child, the mind of the mother may remain much troubled with anticipations of some deformity.

There is no denying the fact, however, that deformity and "mother marks" may be caused by external causes, such as fright, any sudden shock either physical or mental, and we are satisfied that sometimes the very fear upon the part of the mother, that some terrible deformity or mark has been fastened upon her child from beholding some disgusting or repulsive object, may produce the very calamity for which her fears were aroused.

While engaged in the practice of medicine, on two or three occasions, females intimated to me that they felt strongly impressed that their child when born would be marked, they having allowed to go unsatisfied a longing for cherries, peaches or some other article of food, perhaps out of season at the time, and to my astonishment the mark was found just where the mother declared it would be.

I confess that the subject of mother marks has never been satisfactorily explained in our medical works, and some of our over wise men and fluent writers ridicule the idea of any such thing. But there is one proposition that cannot be denied, that in all ages of the world's history, nature has at times deviated from the proper performance of its functions in the reproduction of the human as well as the animal species, resulting in monstrosities, harelip, club foot and a long list of abnormal conditions, rendering the unfortunate victim of either not only a mark for the public gaze, but an object of sympathy, yea, even of loathing by every beholder and alike repulsive to the poor blighted creature itself.

These anomalies come under the head of congenital or connate diseases. Congenital meaning diseases or faulty conformation which children have at birth ; while connate,

having almost the same signification, more particularly applies to those diseases or affections that may have supervened during gestation or delivery.

This is certainly a subject that should engage the attention of all classes of intelligent people as well as the dentist. If Jacob of old could by setting striped poles in the midst of his flocks produce lambs that were ringed, streaked and striped, the same natural causes that operated then may operate now.

I have long since felt that this subject in its different bearings upon the future race of man has not been appreciated and therefore under estimated by all classes of society.

A poor dejected woman in abject poverty, maltreated by a besotted husband, can not reasonably be expected to bring forth a child as perfectly developed in its mental faculties as one who is surrounded by all that is calculated to render her cheerful, contented and happy. This idea may appear novel to some of you, but in my opinion it is nevertheless tenable ground upon which to base a theory.

There is no denying the fact that the characteristics of the mother more often than those of the father are impressed upon the child, and it is the duty of the husband to place before the companion of his bosom, so far as is in his power to do so, while she is "encient," everything that is pleasing to her senses, for just in proportion as she passes the long wearisome months of her pregnancy, resigned cheerfully to her lot, fondly anticipating the happiness in store for her at the end of her term, just in the same proportion will her offspring partake of her nature. If she be cheerful and happy, her child will be sprightly ; but if she pass the time with evil forebodings, afraid to look at any ordinary object for fear of marking her child, ever looking at the dark side of the picture and repelling every ray of hope and sunshine that may seek to enter her breast, her child will make just such an one as we often see, spleenful, spiritless, suspicious, and having inherited an evil nature it is apt to cling to the unfortunate

creature through life. Not only our disposition but our sins too are visited upon our children even to the third and fourth generation. Woman, then, is a wonderful organism, through whom may be transmitted our virtues as well as our sins, and we may add that through our ignorance or our temerity as dentists, we are liable to fasten a deformity upon the yet unborn infant that would blast its happiness for life, and be a lasting monument to our shame.

The case of hare lip and shocking deformity referred to as the text for my essay, occurred in Georgia not long since, and is well authenticated. When the mother of the child was but a few weeks "gone, as the ladies term it, she went to a dentist and had an upper bi-cuspid tooth filled. The operation was a painful one and the tooth felt uneasy for a long time thereafter, as the patient informed me. In due time she was delivered of her child, and to her and her husband's mortification and surprise, there was an extensive fissure through the lip and through the alveolar ridge and gum, on the same side of the mouth, and in the same position of the tooth that had been filled. They were both impressed at once with the belief that the mal-formation was caused by the filling of the tooth. From all the light before me I am inclined to the same opinion. When, therefore, a patient who is "encient" comes to us for relief from toothache, or to have operations performed upon her teeth, we should at once study her temperament. If she possesses that strong will, coupled with that heroic power of endurance and fortitude that many women manifest when subjected to pain, we need not hesitate even to extract her tooth, though this should not be done if it can well be avoided. Palliatives should first be used; should they fail, without making a display of instruments, I would engage her in pleasant conversation, leading her mind away from her present suffering, assuring her that it will be but a trifling operation, if there be any warrant whatever for such an assertion, and when I consider her as prepared for the operation, I select such instrument as is necessary, and in a deliberate manner pro-

ceed to extract the tooth, without lancing the gum. Just so soon as the tooth is out I remind her of the pleasant nights rest in store for her, and the improvement there will be in her feeling generally now that the offending tooth is removed.

On the other hand, if the patient comes with all her grandmothers, and a score of Job's comforters along with her, each one in her presence asking me of the danger that might ensue from extracting the tooth, I promptly advise that we try every other expedient before a final resort to extraction.

On one occasion I stepped into a brother dentist's office to make a social call. My ears, instead of being regaled with the sound of pleasant conversation or the busy tick of the mallet, heard the sobs and bemoanings of a lady patient for whom the Doctor was preparing a cavity for filling. The decay was upon the labial surface of a lower incisor, running around the margin of the gum. All dentists know that these are the most excruciatingly sensitive cavities of any in the mouth. Our brother, I must say, is a fine operator, and, as is characteristic of him, was making the chips fly, and the patient was letting the tears flow in profusion. She was an intelligent lady and exhibited by her manner and suppressed emotion that she was doing all in her power to bear the painful operation without a murmur, but the pain was more than she could bear; she could suppress her feelings no longer, and exclaimed, "Doctor, please extract the tooth or let it alone and allow it to decay away, I will not be tortured thus to save it." The Doctor called me to the chair and asked my advice as to what should be done. I suggested the application of Chlo. zinc or some other pain obtunder. He threw up his hands and at the top of his voice cried out, "Why, bless your soul, I never once thought of it." He made the application, excavated the cavity with comparative comfort to the patient. When he had finished the operation, his patient turned to me and said, "I will remember you with kindness so long as I live."

Now, my brothers, let us learn a lesson from this narrative.

Let us strive to inflict as little pain as possible, not only upon the patient who is "in a delicate condition," but all who confidently place themselves in our power. Let us never have to approach ourselves after committing an error, by the acknowledgment that we know better, but really did not think of the proper course to pursue. Let us so act toward our patients that they will ever be ready to say, "I will remember you kindly so long as I live."

I might prolong this essay almost indefinitely in detailing the terrible consequences that might result to mother and child by indiscrimination upon our part in the treatment of our patients. But time with its rapid strides has whirled around another year, and another meeting of our Association, and as is the rule with most of us, have seized upon the last few hours of the departing year to prepare a paper for our meeting. If, however, I have succeeded in arousing a spirit of inquiry in the minds of those for whom these hints are more particularly directed, I shall feel well compensated for the time and labor bestowed in its preparation.—*Dental Register*.

ARTICLE IV.

"Bleaching Teeth."

"What is the best method of Bleaching Teeth?"

J. TAFT, D. D. S.

This question is frequently repeated, not only by those afflicted, but by those who would remedy the difficulty.

The above query is just at hand from a dentist of acknowledged ability, and long experience. It is proposed, in this instance, as doubtless it is in many others, not because the questioner is ignorant of any method of treating discolored teeth; he may be, and we presume is, familiar with good methods, but the question arises from a desire to know the best method, and that which will meet the greatest number of cases.

A full answer to this question involves many points, more, perhaps, than can be discussed here. This discoloration is not that which is found upon the surfaces of the teeth in the form of deposit. Rarely indeed does the enamel become stained or discolored beyond the surface. The exceptions are found only in enamel of defective structure, or when it has been deteriorated by some disintegrating agents.

The dentine is that part of the tooth usually involved in objectionable discoloration. This structure is variable in its susceptibility to coloring agents; in some cases readily taking up coloring material, in others resisting its entrance. This variation in susceptibility is dependent upon the condition of the dentine in respect to density or the opposite condition. In early life, or at any time before maturity, the teeth are more liable to discoloration than later in life. The age of the patient, therefore, is an important circumstance in the condition of the subject.

The teeth of different persons at the same time of life differ greatly, some being relatively quite soft and much more easily penetrated by foreign material than others; with others they are so dense and structurally so good that they become discolored with great difficulty, if at all. In almost all cases devitalization of the dentine takes place before it is discolored. There is an apparent, perhaps real, exception to this found in those instances in which decay has, by a change of condition, been arrested; the dentine in such a cavity of decay, is dark or even black, and still endowed with some sensitiveness in the dark part; this, however, is not often found.

In order to decide as to the proper course in any given case, the peculiarities and susceptibilities must be recognized and estimated.

A correct comprehension of the cause of the affection in question, is an important consideration, one that can not be overlooked if the best results are to be obtained.

The teeth are sometimes discolored by decomposition of the contents of the tubuli—the soft solid part of the struc-

ture. This is more liable to occur in the teeth of young persons, especially when the manifestation of the vital principle is feeble. This decomposition does not always produce a very marked discoloration, but it does frequently give a dark, muddy, unsightly color, that makes quite a contrast with a living, healthy tooth. This condition is liable to occur in any tooth that has lost its vitality, whether decayed or not.

Again, discoloration of a red, purple or brown hue sometimes occurs by the entrance of the coloring matter of the blood; this can only take place where the constituents of the red corpuscles are separated and the cruorine in solution. This is the more likely to take place under stress of some great violence. The teeth of persons who have died from strangulation, by either hanging or drowning, are sometimes of a purple hue. Arsenious acid applied in small cavities for the removal of sensitiveness of dentine, will sometimes produce this discoloration. Instances of this mode of discoloration are far less frequent now than when arsenic was in common use for the treatment of sensitive dentine. The penetration of this material, like others, varies in different cases, sometimes being little more than superficial, at others, extending throughout the dentine, especially of the crown of the affected tooth.

The teeth often become discolored by the imbibition or foreign material that accumulates, and is retained in cavities of decay till decomposition takes place.

The teeth are frequently discolored to a very marked degree by the compounds of oxidizable metals that are used for filling teeth. Rarely, if ever, is any compound of tin or silver taken up by dentine; they are never found in the mouth in a condition in which that can be done.

Mercury is largely used in compounds and mixtures for filling teeth; this, when in excess and subjected to the temperature of animal or blood heat, will pass into vapor. Mercury is volatile even at low temperatures, and quite so at the temperature of animal heat; its vapor is exceedingly

subtle and penetrating. Mr. Henry Watts, in his Dictionary of Chemistry, vol. iii, p. 884, says: "Vapor rises from mercury between $+ 15.5^{\circ}$ and $+ 27^{\circ}$ (but not at 6.7°) both in vacuum and in spaces filled with air, as shown by silvering of gold leaf kept for two months in a vessel over mercury." (Faraday $+ 7^{\circ}$.)

According to Karstan, mercury at a temperature below 0° gives off sufficient vapor to bring out the image on a daguerreotype plate held over it.

Brame found that sulphur in the very finely divided utricular condition into which it is first precipitated from the state of vapor, is a much more delicate test for the presence of mercurial vapor than gold leaf. By means of this test he finds that at $+ 12^{\circ}$ the vapor of mercury rises to a height of more than a meter—that even at $+ 8^{\circ}$ it appears to have no limited atmosphere; that it rises at ordinary temperatures from amalgams and mercurial ointment—that in presence of air and sulphur vapor it diffuses according to the same law as other gases."

* Mercury, as used in connection with other metals to form material for filling teeth, is in excess of the other metals employed; and in the mouth the conditions are favorable to the formation of vapor. Free mercury being present, and in a temperature of 38° it will necessarily vaporize; this vapor possesses great diffusability, and will permeate almost anything permeable with which it may come in contact. The penetrating power of this vapor is greater than that of any other extraneous material with which the teeth are usually discolored. Its oxydation is readily affected when in contact with air or moisture, at ordinary temperatures; and the color then presented is that so often found in teeth that have been filled with amalgam. This discoloration from their material is sometimes found only upon the surface, but frequently it penetrates more or less deeply into the dentine, in some cases extending wholly through it, thus depending upon the susceptibility of the structure together with the prevention of the vapor from surface escape.

These are some of the ways in which teeth become discolored so as to render bleaching desirable.

How this may be best accomplished is the question.

There is no *single* method that is of universal application, that will accomplish the object in all cases. Cases of like forms and conditions will be amenable to about an uniform treatment.

The first things, then, that claim attention upon the presentation of a case, are the character, condition and the cause of the discoloration. In the treatment of this discoloration, two modes of procedure are available, viz: first, by the use of the proper cutting instruments remove the affected part; and, second, by decomposition of the coloring material, which usually destroys its objectionable character.

By the first method, the removal of the dentine, as well as the coloring matter in it, is affected. This course is only practicable where the discoloration extends but a little way into the dentine, or when the body of dentine is sufficient to admit of the requisite cutting, for the removal of the objectionable part.

In all cases when the teeth would be much weakened by this mode, it should not be employed. But it is practicable when the offensive part may be cut away wholly, or, as in some cases, in part only, then by the introduction of some light substance that will reflect the light, neutralize the objectionable color in the tooth, to some extent at least.

Cutting away part of the darkened dentine may so expose other parts that bleaching agents may be brought in contact with the substance to be acted upon.

When the employment of the second method, viz: decomposition, is decided upon, the following things should be noted: First, The nature of the substance to be decomposed. Second, The depth of its penetration. Third, The decomposing agent. Fourth, The method and facility of bringing the bleaching agent in contact with that upon which it is to act, viz: the coloring material. Fifth, The influence of the agent employed may have upon the tooth structure with which it may come in contact.

The different material with which the teeth are liable to be discolored, vary much in the facility with which they may be decomposed; some are permanent compounds, others feeble; some may be simply washed out, while others will resist the influence of every agent that is practicable in application; some are so stable that they remain unchanged though the tooth-bone in which they are lodged should be dissolved. Therefore a correct knowledge of the character of the material with which the teeth may be, or are, colored, is important to him who seeks its removal.

Teeth deeply stained by the coloring matter of the blood, are not easily freed from the discoloration, from the fact that this stain seems to take a firm hold upon the tissue and agents that will decompose; it will act upon the dentine as well.

The oxide of mercury, or indeed of any of the metals oxygenisable in the mouth, cannot be decomposed in the substance of the teeth, nor indeed in contact with them, except by agents and processes that would at once be destructive to them. But to this statement the criticism may be made that cyanogen readily decomposes oxide of silver, and terchloride of gold, but to this it is only necessary to reply that the teeth are never stained with the gold-chloride, nor with oxide of silver, except upon the surface, and then cyanogen may be employed for its removal.

When the oxide of mercury, or any analogous substance has found a lodgment in the dentine, its removal is only practicable by cutting away the affected part. Chlorine and sulphurous acid are the chief bleaching agents. Cyanogen, while it acts with energy and promptness upon some substances, fails wholly to operate on others, and the danger in its use would forbid its general adoption.

Chlorine is perhaps more used in bleaching teeth, and rightly so, than any, or possibly all other agents put together. In speaking of this subject, Dr. Watt, in *Chemical Essays*, page 117, says: "Chlorine, which has been termed 'the great bleaching agent,' as is well known, has a

strong affinity for hydrogen, and sometimes bleaches by taking this element from the coloring compound, and sometimes by taking hydrogen from the water present, thus liberating the oxygen, which in its nascent state is able to decompose the coloring matter by taking its hydrogen and carbon. In many instances of chlorine bleaching, the processes take place simultaneously, and are not in the least incompatible with each other.

"Oxygen, as it exists in the atmosphere, sometimes bleaches (and sometimes dyes) by virtue of its affinity for elements or compounds contained in the coloring matter."

In the employment of chlorine various processes have been adopted. Free chlorine has, by a properly formed and adjusted tube, been thrown into the decayed cavity of a tooth to be bleached; by this method the desired results have hardly been realized. Chlorinated fluids have been used, but generally with indifferent results.

The more frequent, and by far the best application, is the hypochlorite of lime. In *Chemical Essays*, page 127, Dr. Watt says: "In bleaching with this salt a number of reactions occur. The lime may be regarded as the pilot or engineer that conducts the acid to the place where the action is desired. Its direct action in promoting or retarding the bleaching process is of no practical importance. Chlorine has long been recognized as the great bleacher; but disputes have arisen as to how it bleaches. Some maintain that by its affinity for hydrogen it decomposes water, and the liberated oxygen, with the advantage of its nascent condition, does the bleaching. Others claim that it takes the hydrogen of the coloring principle, and thus bleaches directly. But there is no occasion for dispute, for both positions are correct.

"It has been said that hypochlorite is constantly giving off the acid, and also that the acid itself is decomposed under all ordinary circumstances. Now, bearing in mind that this acid is composed of one equivalent of oxygen and one of chlorine, by its decomposition their active elements are

simultaneously liberated, having equally the advantage of the nascent state, and therefore are far more energetic than if previously free; the oxygen spends its force by taking the hydrogen and carbon from the coloring principle, while the chlorine either takes hydrogen from the coloring matter, or from the water present, in which case another equivalent of nascent oxygen is set to work.

“From this it is seen that one equivalent of hypochlorite of lime (containing, of course, one equivalent of hypochlorous acid) has as much bleaching power as two equivalents of free chlorine, or two of nascent oxygen.”

There is therefore (perhaps) no better compound of chlorine than that with lime just referred to. Care, however, is requisite, lest by its too frequent application, serious injury is done to the tooth—one or two applications at most should be sufficient in any case. Another advantage possessed by chlorine over any other bleaching agent, is its greater power of penetration, and so greater ability to reach the material upon which it is to act.

We trust that a careful consideration of the suggestions here made will lead in some measure at least to an understanding of the principles involved in treating discolored teeth.—*Dental Register*.

ARTICLE V.

Chloramyl, a new Anæsthetic and an Improved Inhaler.

BY GEORGE E. SANFORD, M. D.

Having had considerable experience in the administration of the various anæsthetics in use at the present day, viz: chloroform, ether, etc., and not feeling satisfied with the safety, or rather *unsafety* of chloroform, or with the many faults of sulphuric ether, which so nearly counterbalance its comparative safety as to preclude its use in favor of chloroform in many cases, I have therefore experimented with

various compounds, in the hope of discovering a new and better anæsthetic.

Early in the month of April, 1877, while treating an asthmatic patient with the nitrite of amyl, I became impressed with the idea of augmenting the heart's action with the drug, and thereby *preventing* the tendency to syncope and asphyxia, from paralysis of the heart, in cases of chloroform narcosis.

I then began a series of experiments upon animals, first administering chloroform and then the nitrite of amyl. Then I began to mix them for use, aiming to get such a proportion of the amyl as would just counteract the paralytic effect of the chloroform. I found that while pure chloroform (Squibbs') would mix readily with the nitrite of amyl, producing a fine clear solution, the chloroform of other manufacturers was unsatisfactory, leaving a milky solution of unpleasant odor. Continuing my experiments, I came to the conclusion that a quarter of an ounce of the nitrite of amyl to the pound of Squibbs' chloroform was about the proper strength, and that the combination was far safer for general anæsthetic purposes than chloroform uncombined; indeed, in my hands, and in those of others, so far as tried, it seems to be fully as safe as sulphuric ether, and far more pleasant in its administration, possessing all of the advantages of pure chloroform, but without its dangers.

Upon becoming satisfied of the value of my discovery, I named it chloramyl. I first administered chloramyl to persons in June, 1877, as follows: June 6th I administered the compound to Charles Detric, a young, healthy man, for the purpose of dressing a badly crushed thumb, both the patient and bystanders being wonderfully pleased with its operation. Next, June 16th, I gave it for amputation of a finger; then, June 18th, for extraction of a tooth; since which time I have employed it (chloramyl) in a great variety of cases in both surgical and obstetrical practice. I find that patients usually take it better than chloroform alone, and so far there has not been the first indication of danger

from its use. In exhibiting chloramyl, the patient's face becomes flushed much sooner than with chloroform; but press the drug right along and the countenance does not become pale. Both the heart's action and respiration are kept up thoroughly throughout the anæsthesia. I have given this prescription to several physicians, and induced them to try the chloramyl with the most satisfactory results. I have also (last month) communicated the same to Professors Maclean, Dunster, and Frothingham, of Michigan University; and have reported my discovery to the Cayuga County, N. Y. Medical Society.

Having noticed lately several communications in the columns of the *Record*, from Dr. F. A. Burrall and others, on the use of amyl nitrite as an antidote to chloroform in cases of poisoning, I concluded to publish my discovery. As Dr. Burrall states in his article in the *Record* of July 20th, "With our present knowledge of the antidotal properties of amyl nitrite in relation to chloroform, it is but justice to our patients to have it at hand when chloroform is administered." I agree with him that we should have it at hand, but not in a separate bottle, to use *after the danger has become imminent*, but (as it produces no ill effects) *mixed with the chloroform*, in such a proportion as to prevent the approach of danger, by both syncope and asphyxia; for such I claim to be the effect of this combination, and as such as I give chloramyl to the medical profession, asking that it may be given a full and fair trial, and trusting that it may become the humble instrument in other hands of saving human life. Not that I would detract from the honors due the inventor of chloroform, for it was a grand invention; but if we can relieve its administration from the embarrassment and danger which have heretofore attended its use, will it not indeed be a great boon to humanity?

The formula I use for chlorymal is

R. Squibb's chloroform - - - 1 lb.
 Nitrite of amyl - - - 2 drachms.

Mix.

But I would suggest that the amount of nitrite of amyl be diminished in long and tedious operations, and on further trial it may prove best to vary the proportions, the point aimed at being to use just sufficient amyl nitrite, to counteract the paralytic effect of the chloroform.—*Medical Record.*

ARTICLE VI.

Loss of Blood in Surgical Operations.

Read before the American Dental Society of Europe.

BY ALFRED FUCHS, D. D. S., BERLIN.

MR. PRESIDENT,—I would like to say a *few words* about a new method in *surgical* operations—of operations without a loss of blood. This subject, though not *directly* touching our restricted department of dental operations, must yet be of a certain interest to everyone here present, and might even eventually be applicable to certain cases of our own specialty.

The plan is to isolate, by a series of transverse ligatures, the part to be operated on; and the inventor, DR. LANGENBUCH, of Berlin, claims that he can cut away for instance the lower (or upper lip,) or a part of the tongue, without the loss of a drop of blood.

The advantage of this is obvious. If the patient can be safely and deeply chloroformed, without fear of blood flowing into the larynx, the operation can be performed without undue haste and with a *certainty* of having taken away *all* the effected parts. The patient is not weakened by loss of blood.

Operations of the *tongue* were especially difficult on account of the abundant bleeding, which also makes it almost impossible to ascertain if the affected part has been *entirely* excised. By this novel method of procedure now these difficulties are as entirely done away with, as is the possibility of fillings getting wet since the invention and universal application of rubber dams.

The method of procedure will be best illustrated by a case in practice. Patient, a girl nine years of age, suffering of a cancerous tumor on the back of the tongue, which burst from time to time and bled profusely, so much so that the child's life was endangered.

The patient was chloroformed deeply, and the lower jaw lacerated to bring the posterior part of the tongue well forward and in view—the tongue is then grasped with a cross-forceps (by an assistant) and dragged as far as possible out of the mouth. A large curved needle, armed with ligature silk, is bored into the upper surface, right in the centre of the tongue, and pushed right through—two or three centimetres behind the tumor to be extirpated—the point of the needle is then turned towards the lower jaw (at a right angle to the tongue,) and the needle carried through the mucous membrane of the floor of the mouth back into the mouth one-half of the tongue, and the lingual artery running along the lower border of the tongue is thus secured. The same thing is then done with the other half of the tongue. The ligatures are then drawn together very tightly and knotted, and the long ends hanging out of the mouth serve to hold the tongue in position.

The tumor was excised, a few drops of blood escaped from it—not a drop from the part of the tongue left. The wound was sewn together, and the ligatures cut and drawn away.—*Dental Miscel'any.*

EDITORIAL, ETC.

Anæsthetics for Children.—Probably no more distressing sight is often presented to the dentist than that of a nervous, timid, crying child, suffering with a raging tooth-ache; often with but little sympathy from those who accompany it, and frightened at the idea—a dread which seems instinctive—of an operation. With nerves wrought up to their highest tension, and brain all excited by pain and loss of sleep, the little sufferer is indeed a pitiable object. No persuasions avail to overcome the sense of blind fear, (for this terror is not unreasonable but unreasoning) and the whole spectacle is one of worry, distress and delay. The idea of force is so repugnant to the finer sensibilities as not to be thought of; and dentist and parent are apt to lose temper. He whose heart does not sympathize with the child should not have the care of children, and yet the offending member must be removed.

We have found for years past in chloroform an agent exceedingly useful in such cases, and they are nearly the only cases in which it is used by us. The susceptibility of young children to this anæsthetic, its innocuous effects, the small quantity necessary, and their prompt recovery, point it out as too valuable to be dispensed with. Struggles and screaming only facilitate its administration, as the deep inspirations incident to crying enable the drug to reach the deepest parts of the lungs; and it is surprising how small a quantity inhaled brings on unconsciousness. "Babies take chloroform as they do milk," says an authority, and it would seem that this agent, over which there is so much dispute as to the safety of, in adult use, is harmless with children. If we can save them a pang, it is our duty to do so, and that chloroform is not only a help in this respect but an advantage to the dentist in such cases, avoiding struggling and surgical accidents, we are quite sure. H.

OBITUARY.

Dr. Philip H. Austen.—Dr. Austen died in Baltimore, about three o'clock, October 28th, 1878. He was born in that City in 1822.

Gifted with a superior and enquiring mind, he made rapid progress in his studies and graduated from Yale College, in his nineteenth year. He next turned his attention to medicine and graduated with honors in his class. The practice of medicine was not congenial to his tastes, and he soon abandoned it.

Making the acquaintance of Prof. C. A. Harris, he was induced to study Dentistry, and at once entered the Baltimore Dental College. He stood at the head of his class. His department, artistic skill, superior mind and rare accomplishments at once attracted the attention of the Faculty. He graduated in the class of 1849. Close application to his studies so impaired his sight, that he soon gave up the operative branch of Dentistry. He was appointed to the chair of Dental Mechanism in the Baltimore Dental College in 1852. Naturally gifted, thoroughly trained to work, and splendidly cultivated as he was, (being master of seven languages,) he believed himself unprepared, and at once determined to qualify himself for the untried duties. He gave up all other employment, and toiled for three years before he was satisfied with his attainments as instructor. For the College, it was a most judicious and fortunate selection, as he was repeatedly called upon to teach anatomy, physiology and chemistry, and never found wanting. For aptitude in imparting knowledge and understanding to his class he stood alone. No man could have excelled Austen as a teacher—he was simply perfection. When he retired from the College the loss was not to the College only, but an irreparable one to the Profession.

He made Artificial Dentistry a speciality. His superior judgment, cultivated tastes, and great mechanical genius placed him in the foremost rank. His Christian character, integrity and education refined and elevated this branch of Dentistry.

As Editor of "Harris' Principles and Practice of Dentistry," (that department which received his special attention, was really original matter,) the numerous articles which he furnished for journals, and his translations of foreign works put him in the front ranks as an author.

Dr. Austen's was the brightest, and most thoroughly cultivated mind which has ever honored Dentistry.

He superintended and directed the working of the Austen Coal and Iron Mines, of Preston Co., W. Va., where he displayed great ability as an engineer and architect, and it has been said, had the company followed his practical advice and sound judgment, the mines would have proved one continued success.

We do not attempt a biography of the good and great man. This would require a volume. After this slight manifestation of high appreciation of the professional character, we must express our earnest and sincere esteem for the personal worth of the deceased. Friendship and the loving affection which has clustered around him for years justify it.

In our deep sorrow we are not inclined to murmur against the providence of God. We know the dispensations of Divine Wisdom are right. We submit, we retire into the sanctuary of our own heart and mourn, not too early for the fruition of his fame, not too early for an honored and beloved name.

Happy he, whose completed record shall bear as few defects, and as many virtues. He attained the highest earthly title, that of a Christian gentleman; he held the mystery of the faith in a pure conscience.

In private life he was entertaining, pure in speech, fluent and earnest in conversation. He was pre-eminently free from guile and selfishness in both private and professional intercourse. No sharp practices, disingenuous advantages or mean hypocrisy disfigured or dishonored his private life or professional career. No impurity dimmed, no gall stained his soul. He cherished these virtues as an armor of refined gold, to be sacredly preserved through all the difficulties, trials and temptations of life.

He was all he seemed and professed to be—the natural man. He hated friendship not felt; he despised the pretender.

The sweetest charities and purest virtues were exemplified in his Christian life. Charity to his fellow man, justice to his

neighbor, kindness to the poor, affection and honor in his home. In his family he was always cheerful and contented, and diffused the lifegiving sunshine of his own sympathetic and unselfish nature. The life and character, the daily acts of such an one must always hang around the throbbing hearts of the bereaved and sorrowing.

Dr. Philip H. Austen is not dead—he still lives.

C.

BIBLIOGRAPHICAL.

The Advantages and Accidents of Artificial Anæsthesia. By Lawrence Turnbull, M. D., Ph. G. Philadelphia—Lindsay & Blackiston.

This is a plain and practical volume of some 200 pages, on the subject as above, and is an exceedingly interesting contribution to the literature of the times. The writer comes to his work with all the well known Northern prejudices in favor of ether and against chloroform, and although striving to be fair, shows throughout the entire discussion of the subject that it is difficult to shake off the influence of preconceived bias in favor of ether. With regard to chloroform, Dr. Turnbull says :

“By a reference to the recent cases of deaths from this agent I am fully satisfied that no amount of care or precaution, or mode of administration, or amount inhaled, will prevent in certain cases the fatal result, and yet physicians and others will resort to the use of chloroform, on account of its pleasant taste and odor, rapidity of action, cost, and comparative bulk. I have given its advocates every opportunity to state where, when, and how it can be given with safety, omitting nothing through prejudice or favor, having in my practice resorted to its use before being aware of the great risk incurred to every patient.”

But we are far from finding fault with this book, which no one can read without profit ; and Dr. Turnbull has done a real service to the profession in writing it. The various anæsthetics

are fully treated of, and a Section devoted to nitrous oxide gas. A description of the inhalers in use for administering anæsthetics, with a number of illustrations, add to the value of the book; besides will be found formulæ for local anæsthetics, &c.

We have not noticed in reading the book in question that mention is made of the suggested, and to some extent practised, use of oxygen gas in conjunction with nitrous oxide gas as an anæsthetic. The writer tried this combination (one-fifth oxygen) some years ago with seemingly favorable results. There was a lessening of the stertor, and lividity, and the unhappy physical symptoms generally present with the administration of that agent: though the unconscious condition seemed lessened in proportion. Pure oxygen gas itself has also been used, and the prediction is made by Dr. J. Lynk, (see Dr. Turnbull's book) that alcohol will, by the next decade, rank first as an anæsthetic.

Those who wish a very fair resumé of the progress of anæsthesia, and who desire to have at hand a practical and useful book on the actual manipulation of these agents, cannot dispense with this little book; and the old practitioner as well can read it with profit. H.

Treatment of the Genito-Urinary Organs, the use of Electricity, Damiana, etc., etc. By John J. Caldwell, M. D., Baltimore.

A Pamphlet of eight pages, on the above subject, with a number of cases illustrative of the beneficial effects of Damiana, alterative and tonic, and of electricity as a dynamic stimulant.

The paper is suggestive of thought as to the good effect of moral suasion in conjunction or precedent to medicinal remedies. To persuade the victim of self-abuse or the roué to be a man, and that self-restraint is absolutely essential, is often the most difficult part of the discreet physician's task; and the proper treatment of the sexually diseased can never be overestimated. That they fall into the hands of the quacks and charlatans, who prey alike on their fears and purses, is a doom the honest physician should labor to save them from, and the works of Acton, Napheys, Storer, and others, in this direction, cannot be too highly valued. This contribution of Dr. Caldwell to the strictly professional literature of this subject is in the

main favorable to the therapeutic action of Damiana, a rather new remedy in sexual disorders. H.

The Scientific American.—Thirty-third Year.

This widely circulated and splendidly illustrated paper is published weekly. Every number contains sixteen pages of useful information, and a large number of original engravings of new inventions and discoveries, representing Engineering Works, Steam Machinery, New Inventions, Novelties in Mechanics, Manufactures, Chemistry, Electricity, Telegraphy, Photography, Architecture, Agriculture, Horticulture, Natural History, etc.

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The American Agriculturist.

Many times the small cost will be returned to every person, in the country, or village, or city, who supplies himself and family with the plain, practical, reliable, useful, *paying* information given in the *American Agriculturist*. It was so named because started 37 years ago as a rural journal, but is now greatly enlarged in size and scope, and profusely illustrated, so that it meets the wants of all classes—of cultivators of the smallest plots, or of the largest farms—of Housekeepers and Children—of owners of Cattle, Horses, Sheep, and Swine of Fruit Growers, Florists, Builders, Mechanics, etc. From 600 to 800 original Engravings in every volume, bring right to the eye and understanding, many useful, labor-helping and labor-saving contrivances, largely home-made, and for out-door and in-door work; also plants, animals, construction of dwellings, etc., etc. These numerous Engravings make this Journal greatly superior to every other one treating on the same subjects. The persistent, caustic exposures of Humbugs and Swindles are of great value to all its readers.—Over \$25,000 a year are expended in collecting useful and interesting information and engravings, the benefit of all which can be enjoyed at the reduced price of only \$1.50 a year, post-free; or four copies at \$1.25 each, or ten copies at \$1 each. A specimen copy, 10 cents. Try it a year. It will pay. Published by Orange Judd Co., 245 Broadway, New York.

N. B.—A copy of Marshall's magnificent Steel Plate Engraving, "The Farmer's Pride," is delivered free to every subscriber of the *American Agriculturist* who sends 20 cents extra to cover cost of packing and postage.

Also, *The Examiner* will be greatly improved during the ensuing year. It will furnish all the local news, notices of meet-

ings, assessments, tax and other sales, markets, etc., etc., giving information that every resident of this County *ought* to have, and cannot deprive himself of, without being likely to lose many times the cost of the paper. The Village, Farm, Town and County Talk on subjects of local interest, will be supplied fully in our columns, besides much interesting reading. All this can be had at scarcely 4 cents a week, or only \$2 for the entire year!

Manual of Medical Electricity, and Illustrated Catalogue of Electrical Apparatus. Galvano-Faradic Manufacturing Co., New York.

A Summary of electrical treatment, with descriptions of the batteries, &c., used, and accounts of operations by eminent surgeons. An interesting pamphlet, and seeming new devices of merit for accomplishing the results aimed at in electrical therapy. Some of the apparatus made by this Company seems to be free from the objections commonly found. The thermo-cautery has an adjustable hand-piece, by which the current through the wire can be graduated to a nicety by a touch of the finger, instantly applied. H..

Virginia Medical Monthly.

No exchange is more welcomed than this really worthy monthly. Dr. Edwards is making it equal to any of its more pretentious Northern rivals. The dentist who wishes to enlarge the sphere of his reading (and who in this day does not wish to go outside of the strict routine of dentistry;) will find this worth the subscription. The present (Nov.) No., has an article from Dr. Cutter, of Boston, on *Rhizopods*, (*Asthmatos Ciliaris*) the drift of which is to show that if all catarrhs and influenzas are caused not by root footed animals, at least that some are; and the evidence seems strong. H.

New Electrodes and Battery for Electrolysis of Uterine Tumors. By E. Cutter, M. D., Cambridge, Mass.

A small pamphlet descriptive of new devices by Dr. Cutter, which overcome the difficulties ordinarily experienced in operating upon uterine fibroid tumors. The Dr. says, "in several instances, females who have given up this life, and awaited death, have been restored to the full performance of the active duties of healthy living."

The pamphlet is a candid confession of a want of complete knowledge of the conditions under which the softening and destruction of the adventitious tissue occurs, and thinks it an open question whether the galvanic current has anything to do with it, or in other words, whether the results would not be obtained by the punctures without the electricity." It is written in Dr. Cutter's usual modest but self-possessed style. H.

MONTHLY SUMMARY.

Turpentine Vapor in Accidents from Chloroform Vapor.—Dr. Wachsmuth, of Berlin, has suggested the use of turpentine vapor as a preventive of those accidents which frequently occur in the administration of chloroform to produce anæsthesia. He says that it is well known to every physician that death often takes place suddenly from the vapor of chloroform, in spite of the greatest care and the use of every precaution before and during its administration. The operator, even when assisted by three or four of his colleagues, may see his patients die before him. There is, he states, a very easy and simple remedy for preventing the occurrence of such a serious accident. It consists in the addition of one part of rectified oil of turpentine to five parts of chloroform. The oil of turpentine in vapor appears to exert a stimulating or life-giving effect on the lungs, and protects these organs from passing into that paralyzed state which seems to be produced by chloroform-narcosis. Dr. Wachsmuth, while lying on a sick bed, accidentally breathed the vapor of turpentine, and he experienced from this a strongly refreshing feeling. This fact induced him to try the plan of adding oil of turpentine to chloroform when the latter was used for anæsthetic purposes. The beneficial results surpassed his expectation.—*London Med. Record.*

A Case of Third Dentition.—This case is reported in the *British Med. and Surg. Jour.* The subject had his four upper incisors extracted on account of neuralgic pains, when he was 47 years of age. Ten years afterwards the two upper teeth on the left side reappeared; they were smooth, thin, and transparent, and soon become loose. Two years later they were pushed out with the finger without difficulty.—*Med. Record.*

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ARTICLE I.

Arsenious Acid in Dentistry.

BY J. HARDMAN, D. D. S., MUSCATINE, IOWA.

Read before the Iowa State Dental Association.

MR. PRESIDENT AND GENTLEMEN.—The white oxide of arsenic, as a drug, is sufficiently familiar to those who may constitute my hearers to preclude an attempt on my part to present its pharmacy. It is with its medicinal character and uses that wherewith we have principally to deal, and with which we are most interested.

This agent was introduced into dental therapeutics about forty years ago by Dr. Jno. R. Spooner, then of Montreal. And to him no small debt of gratitude is due from the dental profession on the one hand and the victim of diseased teeth, on the other. It must, indeed, have been a hero that dared to step forward, isolated and alone, with so potent a weapon in hand as the accredited arch poison of almost all toxicologists. But he proved himself fully equal to the task, and demonstrated in every attack made upon its

claims the rectitude of this theory, and thus stamped his name with a lasting immortality.

We find a wide range of opinion amongst authors as to its proper place in the materia medica. Dangling, Eberle and others pronounce it "tonic and escharotic." Wood, Taylor, Christison and others equally eminent say "it is not escharotic nor corrosive." Wood asserts "it does not act chemically, but is virulent through its influence upon vitality in the organism." Prof. J. F. Flagg, in the *Dental Cosmos* of '68, has given us probably the most comprehensive and rational theory of this subject in these brief words, "It is a vital irritant."

One thing is certain, that the practice with this drug has been as vague and diversified as its accredited medical status; and like many others, it has been very empirically used. And could we believe its various advocates, it has cured almost every ailment man has been heir to.

That to be the better qualified to use this potent agent successfully, and to the greatest extent of usefulness we should at least well understand its *modus operandi*, so far as it may affect our use of it in dentistry. Bearing, then in mind that this drug, like many others, is modified in its effect by various causes, as may be instanced, in general or local exhibition; large or small in dose; physiological or pathological condition of organism; whether on living or dead tissue; whether on tissue of high or low vitality, etc., etc. We offer the following definitions which we think may be accepted as safe in practice:

1. That arsenious acid is not escharotic or corrosive.
2. It does not act chemically, strictly speaking.
3. It is not an antiseptic on vital tissue.
4. It is an antiseptic when used on dead organized tissue.
5. It is an irritant on live tissue through the influence of vitality; and by this combined capacity becomes the powerful agent and virulent poison that it is.

The seeming paradox that, although the agent is indeed a powerful antiseptic on dead tissue, yet probably never pre-

serving the devitalized pulp from disorganization and sloughing, is, we think, comprehensible enough when we remember that it has been satisfactorily demonstrated that not more than the one millionth of a grain is absorbed into the structure of the dead pulp. (See Prof. J. Foster Flagg, in *D. Cosmos* of 1868.) This quantity being too insignificant to establish a preserving influence; but yet amply large enough to destroy the life of this very vital organ. That this minute quantity can accomplish so much is made manifest when we consider the dimensions of the apex foramen—the passage is readily and completely impeded by the irritation and its consequences caused by this agent.

Then we observe that arsenious acid is no antiseptic on vital tissue; yet nevertheless a powerful one on organic dead tissue when used in sufficient quantity. An infinitesimally small quantity will act as an irritant on vital tissue, and the higher the vital organism the more virulent is its action.

Neither can the constant sloughing of the pulp and its appendages be caused by the direct presence of this agent in its structure, but a result which would be the same if the animation had been cut off as suddenly and completely by any other agent. Hence the speedy disintegration that takes place on the death of the pulp is not in the least arrested by the presence of this agent in its structure, as the amount is not an antiseptic quantity.

Furthermore, it is found that, although modified action is observable when congestion and even inflammation of the pulp exists, prior to and at the time of the application, yet the result is so very similar that we need not stop to trace in detail the facts.

In order the more clearly to bring this subject before us we shall announce these two general divisions:

First—The use of arsenious acid in dental practice.

Second—Its toxical character and the needs of caution by the practitioner.

Under this first division it would be natural to note what

has been done in practice by this agent, and by whom. Whether as an empiricism merely by quacks, or whether by the honorable and highly qualified in the profession by prescription at once scientific and comprehensible. We confess that the facts are that nearly all in our profession have handled this agent very similarly. That but little short of empiricism or mere routine has been the general habit and rule; and that the few who have well considered its properties and effects, the exception. This fact impresses us with the manifest needs existing that we better study and understand this agent, and thus the better know how and when and where to use it.

To those who condemn the practice of devitalization of the pulp in toto, we have but this to say, although to argue this point pro and con is entirely beyond the reach of this paper. We think the cause of humanity itself justifies it, and that nothing has contributed to its condemnation so much as abuse and malpractice.

Arsenic has from its first introduction into our practice been almost exclusively used for devitalizing the dental pulp. Whatever may, or may not have been the prevailing opinion as to the propriety or rectitude in ever devitalizing this organ, the practice still prevails, and this same agent holds the first rank.

The first to combine creosote with it for this purpose was Dr. Flagg, Sen., of Philadelphia, in 1863. This adjunct formed an excellent compound, both in convenience of application, and in medical efficiency, and a paste of simply arsenious acid and creosote is still very generally the favorite form; although some prefer the further addition of morphine or other narcotic. We are of the opinion, however, that these add nothing to the simple paste.

This paste is usually worked into a minute pledget of cotton wool, and after removing as much of the disintegrated material from the cavity as is bearable, it is placed neatly over and in contact with the pulp, and on this is applied another and sufficiently large pledget of cotton wool satu-

rated with an alcoholic solution of sandarac, shellac, mastic, or some other waterproof gum, and left to remain from one to two days. After a proper extent of time the pulp will generally be found devitalized, and in most cases sloughing—in a semi-fluid state, and can be removed without causing pain.

It has been a prevailing habit of authors of our text books to caution against leaving the application in the cavity over twenty four hours. This we think often leads to imperfect subsequent treatment, as an attempt to remove the pulp and its appendages before the sloughing stage, may result in leaving behind portions that will eventually cause trouble. We therefore advise that a period of at least two days, and in most cases a week or fortnight is best. And here we find we are again supported by that indomitable investigator, Prof. Flagg, in these words, "I therefore instituted a gradial increase of duration of applications, watching carefully the cases, until year after year told me that I could with perfect safety permit them to remain until the pulps were dead and had sloughed."

Again, we have been taught, (and the sentiment has generally prevailed) by our instructors, that the application of arsenic is not correct where either pulpitis or peridontitis prevails. We see no good reason for this, and our experience has confirmed us that there is no need of preparative treatment. No matter what the amount of pain or inflammation, if the tooth is worth retaining, the pulp vital, but it is deemed best to sacrifice the same, then apply the arsenical application at once, and, if properly done, the best results will follow. Indeed, in severe odontalgia from pulpitis there is not to my knowledge so efficient and certain a remedy as this.

There is occasionally a soreness in the connecting membranes of the tooth that has been under arsenical treatment, that has been imputed to the result of an absorption of the drug into these structures, through the apical foramen. This view we think incorrect as a rule. That there are cases

where this agent may pass the apical foramen in quantity to do violence is possible, and we propose to consider the same as we proceed farther, but wish it here to be understood, that we hold, that as a general rule this soreness is only the result of the death of the dentinal nerves and vessels, and would be the same if destroyed by any other agent. This soreness usually requires but little attention, usually subsiding in a short time without special treatment.

The next, and what we regard as the most important use this agent may be made to subserve in the dental practitioner's hands, is that of denuding sensitive dentine. We are aware that here we are advancing upon disputed territory, and may seemingly appear to again bring to the front a controversy that in years past raged warm, and was by the survivors declared settled against, and in condemnation of this practice. Let that be as it may, and although the theory is not to be eschewed, yet we think that knowledge gained and backed by experience is most trustworthy and reliable in practice. And here we know whereof we speak, feeling confident that it surpasses all other agents ever brought to our notice for this purpose in efficiency, and, at the same time safety in regard to the security of the vitality of the tooth. Of course we refer only to those cases of extreme sensitiveness of dentine where the pulp is not exposed, but where there is still remaining some dentine covering.

It is very evident to us that this agent has no effect chemically or otherwise, to injure the dentine itself. Neither do we entertain the least idea, as some have done, that it may enter the dentinal tubuli, and thus finally injure the pulp. We have had frequent opportunities to observe the unimpaired vitality of teeth, from five to fifteen years after being treated for sensitive dentine, where the application of arsenic had remained in the tooth for the period of forty eight hours, and never have we seen a single case wherein this agent had evidently destroyed the life of the pulp, where there has been some healthy dentine covering it at the time of application. And we have used it in many

cases for this purpose, and on even quite young subjects. You will bear in mind that this agent is an irritant only when in contact with vitalized structure, and the degree of its virulency is in proportion to the grade of said vitality. Then, where there is but inferior vitality, as in tooth structure, the consequent irritation, if any, must be comparatively slight, even upon the surface of dentine where it comes into positive contact. There is then not the remotest danger to the pulp or any other very vital part of the tooth.

We use it for this purpose in the same manner as for the devitalization of the pulp, except as to duration of time. From six to twenty-four hours is generally sufficient. Yet a much longer time will do no harm. The application should remain in situ up to the time of excavation, or the sensitiveness may again partially return.

But one other use for arsenious acid in dentistry we will mention. (I think the credit for first using arsenious acid for this purpose is due Dr. J. D. White, of Philadelphia.) That is, its power to render more practicable the removal of teeth that are sometimes found so obstinately attached in their sockets, as to preclude their safe removal by a mere immediate force with the forceps.

I will illustrate this by giving a case. Mr. N——, aged about forty, of sanguino-bilious temperament, wished the removal of an only remaining canine tooth. We placed a well selected pair of forceps upon it and made traction, the patient grasping with both of his hands and added to ours his entire strength, yet not in the least affecting our object. We removed the instrument, and being told by the patient that he felt symptoms of the maxilla giving away just below the eye, we concluded best to desist.

We then, with a thread saturated with arsenical paste, ligated this tooth, pushing the thread well up under the gums, and then passed several turns of dry thread over its which we well saturated with sandarac solution. This we allowed to remain for forty-eight hours, and after removing dressings, we found the gums somewhat tumid and quite

black around the neck of the tooth; the tooth was sore and some loose. We applied the forceps once more and readily removed the tooth, without one-third the tractive force used upon it two days previous. The edges of the socket seemed somewhat divested of periostennin, but a speedy healing followed as usually occurs in ordinary cases. We have repeated this practice in several instances and with invariable success.

It now remains for us to consider before closing, the character of this agent in reference to some of its topical tendencies when used in the practice of dentistry. If one case is neglected, dire misfortune may follow as a sequel. Hence, we cannot feel justified to leave unwarned the party whose duty calls him to use this potent agent upon his confiding patrons.

The circumstances under which injury may be the more likely to occur, are:

First—Imperfect and bungling mode of application; and

Second—In over treatment in devitalizing pulps, especially in young subjects.

First—We have seen a few cases of injury caused by inattention and want of care while making the application. Especially is there cause for care when it is intended to make an application to devitalize where the cavity extends under the edge of the gum. In cases where injury has thus been the result of carelessness the following may be the sequel: On the following day the gum between the teeth will be swollen and dark and tooth somewhat sore on percussion. Third, fourth and fifth days symptoms are much the same, save that some alteration is observable, and on probing the sensibility is impaired and the periosteum gone from the alveolus between the teeth where the application was made. On sixth or seventh day, dark color of gums gone, more ulceration, and the now bare alveolar process between the teeth is, found to be loose, and when removed, leaves a wound of greater or less extent. Although this readily heals, yet the permanent loss of so much osseous tissue ever

remains to tell of the bad practice that may thus follow to distress the patient and mortify the operator. These are not the greatest injuries that may arise from such acts of carelessness, but some of you have very likely met with far worse cases.

Secondly—There is danger of over treatment, and this may occur in more than one way. An application may be removed by other parties than the one who made it. An interval of inattention by the patient of weeks may supervene, when pain from peridontitis starts him to some other dentist who may attempt to “kill the nerve,” and, without a clear diagnosis or history of the case, apply the agent to an empty chamber that may communicate with the socket by means of the apex foramen and through this avenue pass into the deep tissues of the jaw, and the results be serious. Irritation, followed by ulceration of both soft and hard tissues of the maxillary, with permanent deformity, untold suffering and, perhaps death.

Permit the relation of a single case, (and not the worst we have seen,) for illustration :

Mr. ———, a travelling clerk of a Chicago house, aged about thirty-five and of good constitution, called at our office about five o'clock p. m., with a request that we “put a little arsenic in” his tooth, with lateral cavity extending into the pulp chamber, which was empty. Tooth sore, gums red and swollen, and tooth appearing to be swimming in pus.

We said “No, this tooth can have no arsenic treatment, but the forceps is the proper remedy now.” Patient not being prepared for this summary announcement, refused our prescription, and promised to call in the morning.

This was the history of the case as he gave it: “Had arsenic put into the tooth just before leaving Chicago. Next day at La Salle had tooth cleaned out and had arsenic again put in. Second day after, was at Davenport and had arsenic again put in. I thought as it was still hurting me it needed more arsenic, and I called for that purpose.”

In the morning he called as he had promised to, and as he

stood in the doorway he held up between thumb and finger the tooth, saying, "That's him, I picked him out easily with my fingers." The root was as free from peridentium as though it had been scraped off on purpose. We invited him into the chair, and on inspection found a point of bare alveolus protruding which we grasped with small tweezers and brought away readily the entire socket, forming a perfect sheath for said tooth.

In this case is furnished material for an extended communication itself. We will but remark, however, that it is our firm conviction that had there been but one application made, and that allowed to remain even double the entire time, no untoward results would have presented. The mischief came in the reapplications into an empty pulp chamber and root canal and allowing the drug to pass through the apex foramen, thus establishing the specific effect of the agent on the vital tissues in the jaw around the tooth.

Again, special cause for caution is found in the treatment of immature teeth in young subjects. In such cases the grade of vitality is active, and through this a greater liability to extensive injury is presented. Then another danger in such cases is, that the apex foramen is very much larger in such teeth, and this may favor a ready transit for the drug. Cases might be cited showing results arising for want of due caution that have caused the direst regrets. But this communication is becoming too lengthy and we will desist, adding that in cases of young persons where teeth are maturing, and it is resolved to devitalize, the application had best remain but twenty-four hours, and its removal not entrusted to the patient, as you will many of you bear me witness that the patient for want of proper information is often found to assume the prerogative of knowing best how long it should remain, and how often reapplied "to guarantee the sure death of the aching nerve." And should the patient attempt the removal, he will most probably take away but the covering and leave behind the acid in the cavity.

In closing permit me to appeal, especially to the young

practitioner, that while ample opportunity exists in which this agent can be made to contribute largely and safely to the accomplishment of much usefulness, yet a vigilant and intelligent discrimination is incumbent upon him morally, honorably and professionally, to avoid the snares and dangers your humble servant has feebly, though earnestly attempted to portray.—*Dental Register*.

ARTICLE II.

*Address to the Graduates of the Baltimore College of
Dental Surgery, March, 5th., 1878. **

BY REV. JULIUS E. GRAMMER, D. D.

Rector of St. Peter's P. E. Church, Baltimore, Md.

GENTLEMEN OF THE GRADUATING CLASS.—In completing your curriculum, as students of this time-honored Institution, I congratulate you that you are about to go forth with the credentials of such an honorable career. The college itself will reflect dignity and character upon your profession.

Being the oldest, and, at one time, the only Dental College in the world, we may safely say that it is not only the mother, but the Queen of Dental Colleges. When I think of the mighty roll of over seven hundred graduates which grace its history, and recall the fact, that they have come from every part of this land; from Canada and the West Indies; from South America and Europe; while they are practising their profession in London, in Berlin, in Paris and Madrid, in Barcelona, in Florence and Rome, in Vienna and St. Petersburg, I may well say, "*Quae regio in terris nostri non plena laboris?*"; and not only so, but when you recall the fact that without exception all the great dentists in Europe are graduates of this school, you may well rejoice that you are to begin under the auspices of a school whose fame has gone into all lands.

It involves a high honor as well as a corresponding responsibility to bear the testimonial of such an institution. The names of Hayden, Harris, Bond and Baxley, among the founders, and of those who have since nurtured and are now guiding the college are an incentive to you to act well your part in the future. Gentlemen, I hail your class to-day as another addition to the long line of witnesses to the advantages of a scientific and high culture in professional pursuits. I see that your curriculum encourages no hope for the superficialist and the pretender. To deserve and earn one of these diplomas, it is necessary to have undergone a training in Surgery, Anatomy, Physiology, Pathology, Therapeutics, Materia Medica, Chemistry, Dental Mechanism and Metallurgy, which has won the approval of critical examiners and given pledge of your aptness for your art. It is a cause for gratulation that such an institution has been founded, throwing a guard around the community to protect it from cruel impostors, and adding another niche in the temple of learning for a profession which is the hand-maid of health, and the nurse of the beautiful and good in our physical and social life. Who can describe the potentiality for good or evil in this delicate and skillful art?

If the face of many is their fortune, you have it in your power to heighten or destroy the prospects of many a fair daughter of Eve, and many a brave son of Adam. If the disposition is said to depend upon the digestion, then who can do more to gladden with cheerful health or to embitter with dyspeptic melancholy the social circle, than the dentist?

If it be allowed that of all the ills that flesh is heir to, there is none more acute and intense than those which arise from disorders and disease in the members which you cure, surely we must hail a good dentist as entitled to rank with St. Luke, the Evangelist, as "the beloved physician." And if I were asked to name one of the most serious offenders against the social conscience and as worthy to be banished from the Republic of Letters, I should name the man who dares to tamper with those delicate organs which

affect our health, our speech, our happiness and our comfort as much as any part of our bodily organism.

Probably there is no department of the mechanics of medicine which boasts of greater progress than dentistry. When we compare the improvement in your science, the invention of chairs and instruments, of every appliance for assuaging pain, of subduing and mastering the difficulties of mechanical obstructions; of supplying the wastes in the dynamical economy of physical life; of supplementing the losses caused by disease and age and giving the appearance and the feeling of youth, to those afflicted with premature decline, I may well rank your profession as among the foremost fruits of our modern civilization. There is a poetry and a religion in the silent and effective agencies by which the patient is lulled to unconscious sleep, during which triumphs of dental surgery are won, without the cost of pain, which otherwise must have been lost to science. For there are some operations, gentlemen, in which no success could atone for the agony, and some experiments which would have cost too dearly had not your art furnished the aid to science, and the anodyne and anæsthetic to the patient. What a humane and glorious science is that which like Christ give articulateness to speech, and out of the mouths of babes and sucklings ordains praise. What a public benefactor is every dentist, who, in the skillful exercise of his profession, gives a relish to the food we eat, an aroma to the air we breathe; and dissipates the clouds of misanthropic discontent, with the genial light of a benign and generous philanthropy. And here it is well to vindicate your profession from a popular and ignorant idea that it is not one of the learned branches of medical education. Some people suppose any one may readily be a dentist, without much reading, experience or practice. But the fact is, (as we see,) it embraces one of the most important parts of surgery, it involves a knowledge of Physiology, Anatomy, Pathology, Therapeutics, Medicine, Chemistry and Metallurgy. The reason why the credulous and ignorant have formed such

false opinions, is because such an amount of presumptuous quackery prevails as to justify almost any superstition. And we have heard of an ignorant practitioner, who being baffled in his effort to extract a deeply rooted tooth, tied his patient to a fixed point and fired a blank cartridge to make him draw back and do in his fright, what the so-called dentist could not do with his hands. And I doubt not you have seen this depreciation of your profession in the complaints made of charges for well-earned skill. "You charge me two dollars, said an ignorant patient for extracting a tooth in a *moment*, when a friend of mine only paid fifty cents, and he was drawn all around the room." The science which does without pain, and in a moment the work which cost hours to the bungling doctor and agonies to the poor patient, deserves a better judgment and a higher appreciation from an enlightened public.

There is a suggestion, which, I trust it will not weary you if I dwell upon it, and that is *the temptation you are under to disregard general laws*. The natural tendency of the mind, is to observe facts separately—to isolate phenomena. The empiricism which so widely prevails, is owing to this tendency of the popular mind to seize exclusively upon facts; in other words, it is because general principles are ignored, because a large generalization is neglected, a nice perception of cause and effect is overlooked, and truth is sought for in single examples. All true science has constant reference to the causal principle. The law which determines any phenomenon, is the key to unlock that department of nature to which it belongs. The only true method in any inductive process of reasoning, is from effect to cause. And as it takes more than one swallow to make a summer, so it demands more than one fact to establish a law in any science. The tendency to be more impressed by affirmative than with negative facts, was noticed by Lord Bacon, as a source of great error in the study of the sciences. It is impossible to construct a harmonious and true system upon any single one, or even a series of phenomena. Logic

teaches us that it is fallacious to draw a universal conclusion from a particular premise. The wider the field of induction, the more abundant will be the harvest of real and precious truth. The true progress of your scientific profession must depend upon generalization—upon the classification of phenomena under established law. Hence, the great advantage to be derived from the practice of reporting and publishing cases in medical journals is, that while they furnish a vast array of facts, at the same time they contribute to the induction of the general laws of pathology. And it was owing to a neglect of this important principle, that for a time, the impositions of the Royal Cure, the Sympathetic Powder, and Metallic Tractor, so widely prevailed.

Again let me remind you, in your devotion to your profession and its kindred studies, *to guard against the temptations of materialism*. The attractions of seemingly learned science, which would arraign the testimony of revealed truth, and claim a wisdom above that of the Bible, have lured many into deadly error. There is a true philosophy in all science, but any system which seeks to account for the existence of the universe and of man, the crowning work of God, upon any other principle than that of the Bible must be false. And materialism virtually does this. It would teach us that life is the result of chemical forces; that man is but the last of a series of progressive developments which began with the first nucleated cell. Such a theory would rob our nature of its highest attributes. It does not account to us for conscience, nor explain the distinctions and origin of our sense of right and wrong; of virtue and vice. How can materialism explain the vast disparity in the intellectual powers of man. Are they dependent solely upon brain tissue? Are the immortal poems of Homer and the lofty meditations of Plato, the result of physiological condition? As the particles of matter which compose our bodies are constantly undergoing new forms, can materialism tell us by what law it is that memory retains or transmits knowledge, or that reason deduces inferences from premises de-

pendent upon elements long since disorganized. As well consent that the wires of the telegraph are the instruments of thought as to maintain that mind and matter are one. They are intimately united! As Bishop Butler, in his *Analogy*, states: "They mutually affect one another;" but they are not identical or essentially co-existent and interdependent. No study convinces us more profoundly of the presence and power of the great Creator than that of the mechanical adaptations of our physical organism to the uses of the indwelling spirit.

The ear may be said to be a kind of stethoscope by which we learn to note the breathing of animated nature and to sound the great lung system of the atmosphere. The eye combines in the highest perfection the properties both of the microscope and the telescope. The nerve-system is a sort of telephone, interpreting to us the voices of nature which awaken the responses of the soul. Yet intimate as the sympathies of mind and matter are we must distinguish them. How many examples there are of the superiority and independence of the intellect to the body. Cicero, Milton and Burke, even in the decline of their life, gave proof that their immortal thoughts were still fresh and brilliant, and that the lamp of their genius was undimmed by the earthen vase; and as it dissolved, the flashes shone forth more distinctly than ever.

Of all forms of material existence, we may say, with the Psalmist, "They shall perish and they shall wax old as doth a garment, and as a vesture shalt thou fold them up, and they shall be changed." But to the soul of man it were no irreverence to accommodate a passage of holy writ, which so truly expresses its nature: "But thou remainest and thy years shall not fail."

Materialism regards all science as an experiment, and accounts for all phenomena by what it calls "the laws of nature." But nothing can satisfy the demands of our reason and the yearnings of our hearts, but the existence and confessed presence and power of the Personal God.

Well has the poet Cowper expressed it:—

“Some say that in the origin of things,
When all creation started into birth,
The infant elements received a law
From which they swerve not since.”
“That under force
Of that controlling ordinance they move,
And need not his immediate hand who first,
Prescribed their course to regulate it now.
But how should matter occupy a charge
Dull as it is, and satisfy a law
So vast in its demands, unless impelled
To ceaseless service by a ceaseless force,
And under pressure of some conscious cause?
He feeds the secret fire,
By which the mighty process is maintained.
Who sleeps not—is not weary; in whose sight
Slow circling ages are as transient days;
Whose work is without labor,
Whose designs
No flaw deforms, no difficulty thwarts
And whose beneficence no charge exhausts

To believe that law, “*a vis formitiva*,” is the great first cause of all effect, would be as unreasonable as to believe that a piece of mechanism could be constructed and moved by itself. Even if we were to grant that all the laws of nature were made to work without the superintending agency of Jehovah, and that this complex machinery was like Babbage’s Computing Machine, to work out its own results; a great clock-work, wound up once, and then left to control the oscillations of human experience, we could not avoid pre-supposing a designing mind as the originator of it all. The material world is a vast cathedral, in which the chorus of his praises is perpetually hymned.

All philosophy has failed to give any satisfactory explanation of human existence. Atkinson’s teachings of the nature and development of man, are not one step in advance of the heathen Lucretians. The ancient epicureans considered the soul corporeal, but of a finer substance than the body. The Stoics thought it was ignited air, and Pytha-

goras that it was harmony. Yet they all knew really as much of the cause of life and the nature of the soul as the latest authorities of materialism. They, however, confessed their ignorance. They felt the need of a light above that of earth-born philosophy. Aristotle exclaimed, "cause of causes pity me;" and yet these prophets of materialism spurn prayer, and ridicule the doctrine of a providence.

Never does a student of science, and most of all of medical science, which appeals to the best sympathies and touches the finest cords of our nature, enter into a just appreciation of his responsibilities to society, until he has learned to view his studies and investigations in the light of Christianity. How it ennobles every pursuit to realize that every truth is a link in the chain which binds us to God! What great names, like stars of the first magnitude, flush the firmament with the lustre of their devotion to Revealed Truth. Bacon said: "I have found thee in the garden and the fields, but most of all in thy temple." We see, among physicians, Gregory and Boerhave and Sydenham and Rush, who like the Magi, have laid their learning and influence and wealth at the feet of the great teacher, as votive offerings to truth and holiness. Who are the men who have gladdened life the most by their example and counsels, who have adorned the highest positions by wisdom, moderation and integrity; who have contributed the most solid and precious treasure to learning, and left their names as a heritage of blessing to their fellows? They are the men who have learned to recognize a higher teaching than that of the retort and the crucible only, and who have walked with reverent steps and uncovered brow the great temple of natural science.

They have felt the truth and beauty of Cowper's lines:

"Thou giv'st its lustre to an insect's wing,
And wheel'st thy throne upon the rolling worlds;
From thee is all that cheers the life of man.
His high endeavor, and his glad success,
His power to suffer, and his will to serve.
But oh! thou bounteous giver of all good,
Thou art, of all thy gifts, thyself the crown,
Give what thou canst; without thee we are poor,
And with thee rich, take what thou wilt away."

Shall I remind you of the oft repeated fact that your education is just begun. There are many temptations to content ourselves with the present achievements. Your diplomas are a pledge of your loyalty to conscientious study. The motto of Michael Angelo was "I still learn." The constant advances in your profession will compel you to be men of reading and inquiry. The intense activities of the age have quickened the intellectual energies of men of every profession. It requires no ordinary effort to keep pace with the progress of learning. He who relaxes his energies or looks back, must soon be left a laggard in the race, and suffer the oblivion and defeat which are the doom of indolence. Let the same spirit which prompted the motto of a lover of his art, be yours, "*Nulla dies sine linea*." The aids which are now furnished are an additional incentive to close and constant study. The nicest inventions in mechanical instruments; the discoveries in chemistry; the knowledge of the affinity which metals possess for the non-metallic, and the investigation of their properties, and indeed the whole science of metallurgy have contributed to heighten the demands and the standard of your noble profession.

What has been done already, will inspire confidence in the capabilities and the promise of the future. The names of Galen and Fullopius, of Eustachius and Ambroise Taie, remind us of the masteries already achieved. We follow a long line of able and patient explorers, who, like John Hunter, of England, and Bichat, of France, prepared the way for Blake and Fox. We learn from the advertisements in newspapers of 1803, that the practice of making and cleansing teeth appears to have been in the hands of silversmiths or jewellers. It was to a Baltimorean that Dental Surgery owes its first claims to rank as a distinct branch of science. In 1826 the principles of Dental Surgery, by Leonard Koecker, M. D., who practised his profession for fifteen years here, and in Philadelphia, appeared in London. And since then every year has added to the glory and success of the profession.

Baltimore has the credit of publishing as early as 1839, the *American Journal and Library of Dental Science*. And we see this College, with its rich equipments and its skilled professors, the monument and the witness of the advances in this humane and scientific department of knowledge.

The very city, then, with its historic renown appeals to you to "quit you like men." How superior are your advantages; what fresh discoveries; what new light floods your path; what great names appeal to you to be men of patient, earnest, diligent study. We have great reason to be proud of our city to-day.

It is not only the city of monuments, with the memories carved in stone of the heroes of North Point, and with the noble image of the soldier and statesman who was "first in peace and first in war and first in the hearts of his countrymen;" but it is the city of schools and colleges and universities. Its libraries and lecture halls incite the dullest aspirations and feed the purest tastes. Its churches and asylums remind us, that while states may fall and arts may fade, yet there abide these virtues which never die, Faith, Hope and Charity.

ARTICLE III.

Alveolo-Dental Abscess.

BY D. D. SMITH, M. D., D. D. S.,

Professor of Mechanical Dentistry, Philadelphia Dental College.

(Read before the Odontographic Society of Pennsylvania, Nov. 6th, 1878.)

Alveolo-dental abscess is a common surgical affection, often attended with extreme suffering, and more or less serious consequences, according to the condition of the patient, the structure of the alveolar tissue concerned, and the location of the tooth. It is usually amenable to rational treatment, admitting of cure without loss of the tooth. It may be defined as an abnormal cavity containing pus, having its seat in the cancellated structure between the

external and internal alveolar plates,—the result of degenerative changes in the root, pulp, peridentium, or associate parts.

A sac is generally formed through an effusion of lymph, limiting the pus-forming surface, and accommodating itself to the quantity of broken-down tissue present. This sac or limiting membrane is commonly situated immediately above or below the root of a tooth (according as it is in the upper or lower jaw) with which it communicates through the apical foramen. In single-rooted teeth it is nearly always in this relation, but in double or multi-rooted teeth it is not infrequently found between the roots, and occasionally just at the bifurcation.

Should a root causing an abscess pierce the antrum of Highmore, as is sometimes the case with the second superior bicuspid and the first and second superior molars, the sac may form in this cavity, giving rise to antral troubles.

Alveolo-dental abscesses are of two kinds, viz., acute and chronic. The acute variety exhibits the same symptoms as an acute abscess in other parts,—violent throbbing pain, redness, heat, swelling, tension, altered circulation, and the formation of new products; with a tendency to open by ulcerative absorption on the nearest surface.

Chronic alveolo-dental abscess may result from change in character or long continuance of the acute, or may exhibit subacute symptoms from the beginning. It is lacking in the activity and violent manifestations of the acute. The pain, while constant, is rarely intense; the discoloration is not marked; the temperature is but little increased; the swelling is usually but slight, and the tendency to new products not decided in character.

A marked and even diagnostic symptom is, inclination to infiltration of pus into the surrounding tissues. It may excavate the alveolar structure, involving two or more adjoining teeth, or it may find its way through the alveolar plate and burrow in the submucous tissue, dissecting its

way between the periosteum and the bone (as the palate processes of the superior maxillæ,) ultimately causing necrosis.

Such manifestations are found in persons of a strumous diathesis, and in the weak and debilitated from whatever cause.

A chronic alveolo-dental abscess, following an acute, is usually in connection with neglected roots, but may be associated with any tooth where the cause is allowed to remain.

The duration of the acute may be stated as from eighteen hours to ten days. With the exit of pus through the osseous structures the active manifestations, except the swelling, subside, and becoming chronic the discharge is continued, at intervals or continuously, as long as the cause remains; this may be for weeks, months, or even years.

Anæmia, strumous diathesis, the lymphatic temperament, pregnancy, and intemperance may be considered as predisposing causes. The exciting causes approximatively in the order of frequency are putrescent pulps, crownless roots of teeth, necrosis, pivoted roots (the canals containing putrescent pulps,) filling materials which have been forced through the apical foramen, salivary calculus, and mechanical violence to a tooth, as a blow.

An alveolo-dental abscess may point and open in one of nine ways: 1st, through the external alveolar plate and gums directly into the mouth; 2d, through the internal alveolar plate and gums directly into the mouth; 3d, externally or internally through the alveolar plates, emerging by a sinus through the mucous membrane at a point remote from the seat of the trouble; usually near the tuberosity of the superior maxilla, or behind the uvula; 4th, through the apical foramen and canal of the root, the pus escaping into the mouth from the crown of the tooth; 5th, from the seat of the abscess, downwards if in the upper jaw, upwards if in the lower jaw, between the peridentium and

the cementum, and appearing at the free margin of the gum; 6th (in the lower jaw,) from the under surface of the *body* of the bone, and thence directly through the integuments; 7th (in the upper jaw,) externally through the cheek; 8th, into the antrum of Highmore, the pus passing through the middle meatus, to find exit from the nostril on the side of the lesion; 9th (when the trouble is in connection with the lower dentes sapientiæ, situated far back in the coronoid process or at the junction of that process and the body,) downwards and inwards through the osseous structures, under the cervical fascia, and thence to the thorax.

The prognosis of an abscess, in connection with single-rooted teeth, is almost always favorable.

(In classes fifth and ninth tetanus has sometimes supervened, and death from pyæmia has occasionally resulted from cases described in class fifth.)

The prognosis as regards the restoration of the tooth is favorable, excepting *lower incuspidis in class fifth*, and teeth described in classes sixth and ninth.

The more common sequelæ of alveolo-dental abscesses are, continuous discharge of pus; thickened periodontal membrane causing a prolonged condition of "sore tooth;" facial neuralgia; indurations; osseous tumors, especially on the body of the lower jaw; necrosis of some portion of the maxillæ; trismus, and pyæmia.

The diagnosis is to be made from both general symptoms and the local manifestations.

In the acute form the general symptoms are, fever with its usual accompaniments of hot, dry skin, coated tongue, constipated bowels; more or less prostration, and often violent pain shooting down the neck or up through the face and head.

The local manifestations are more decided. The tooth at first seems elongated, and is "sore" to the touch; a dull pain begins in the socket, but increases in intensity, and soon becomes throbbing; the parts in the immediate

vicinity are more and more responsive to pressure, swelling and discoloration following. These phenomena continue and augment so long as the pus is confined within the alveolar walls, but coincident with its escape into soft tissue, the inflammatory activities are quickly modified, save only the swelling, which increases until the evacuation of the pus externally.

The treatment of alveolo dental abscess may be either palliative or curative. Palliative treatment may be both general and local. The former consists in the use of morphia, opium, assafoetida, or quinia, according to the indications of the case; the latter is the more important, except in cases of great severity. It may consist in the application of extract of hamamelis, tincture of arnica or aconite, aconitia ointment (1 grain to 1 drachm of cerate,) poultices, or the use of pepper-bags to induce free suppuration, and to prevent cacoplastic deposits.

Early extraction should be resorted to in all cases of crownless roots (excepting such as are valuable,) partly erupted lower dentes sapientiæ, and most cases of bicuspidis or molars which have no antagonists,—especially if there be considerable recession of the gum and alveolar structure.

A recent alveolo-dental abscess with a fistula opening directly through the gum, particularly if associated with single-rooted teeth, responds promptly and satisfactorily to well-directed treatment. If the abscess be in connection with a small and tortuous canal, as that often found in the anterior buccal root of a superior molar, or the compressed anterior root of a lower molar, the treatment is complicated by the mechanical difficulty of gaining access to the seat of the trouble.

In these, as in other cases, putrescent matter and *debris* of whatever kind should be thoroughly removed from the canal, and the entire pulp-cavity disinfected.

The cleansing of canals is best done by first protecting them from saliva, and wiping the cavity of decay dry; then

with the free use of alcohol, a little cotton, and a probe of such shape as will readily pass into the canal, the offending matters may be easily and satisfactorily removed.

If then, with a probe wound with cotton, a little oil of cloves or creasote (preferably the latter) can be forced through the apical foramen, and thence out at the external fistula, the cure will be materially hastened; but drilling through the root to effect this should never be resorted to. (A white eschar at the mouth of the fistula indicates the passage of the creasote.)

Whether the medicament passes the apical foramen or not, it is better to dress the root with medicated cotton until the fistula is satisfactorily healed.

To dress a root, a few fibers of cotton are twisted into a thread one to two inches long, of a size to pass easily into the canal; the small end being dipped into the medicament (glycerine, creasote, or oil of cloves,) the thread is passed to the end of the canal, and allowed to remain there. In whatever way the crown-cavity may be temporarily stopped, the root dressings should be easy of access. If the work of cleansing the canals has been thoroughly done, but two or three of these cotton dressings, renewed at intervals of two to four days, will usually be required to effect a cure.

If the pus, instead of establishing an opening through the gum, has found exit through the canal, the treatment is more complicated and much less certain in its results. As before, the pulp-cavity and canal should be carefully cleansed and disinfected, and the medicated cotton dressings (preferably oil of cloves or glycerine) applied. The cotton, however, should in such cases be so arranged as to be at the full command of the patient, to whom instructions should be given for its immediate removal on experiencing a sensation of *fullness* in the tooth,—this being the premonitory symptoms of renewed inflammation in the peridontium. Under no circumstances, in these cases, should the first cotton be allowed to remain more than three or

four hours. It is better that it should be removed by the operator than by the patient. Absorbent cotton, unmedicated, introduced and kept dry, is a valuable adjunct in the treatment of abscesses without external fistulæ, as by its absorbent properties it draws the pus to itself, which is thus better removed than by any other process.

This frequent stopping and unstopping, using oil of cloves for its purifying and soothing effects, will often effect a cure in ten to twenty days.

When the tooth will bear a tight cotton stopping for eight or ten days, especially if there be no unpleasant odor on its withdrawal from the canal, it may be permanently filled.

If the abscess be situated at the end of an inaccessible root, or if after repeated trials it does not improve under the stopping treatment, the root may be tightly closed and a fistulous opening forced through the alveolar walls and gum. With judicious stimulation this may be accomplished in from two to four days, when the case is reduced to one of the simplest form, and should be treated as already described.

The stimulation in such cases may consist of an application, every ten to twenty minutes, of a mixture of equal parts of tincture of capsicum and chloroform (well shaken,) applied on a pellet of cotton over the surface where it is desired to establish the fistula. This, while an excellent stimulant, is difficult for the inexperienced to apply, for which cause it has been almost entirely supplanted, in my practice, by what are known as "pepper bags," a device of my friend and former colleague, Dr. J. Foster Flagg.

Pieces of thin muslin and of the lightest muslin rubber, about one half by three-fourths of an inch each, are sewed together on three sides, making an open sack.

Into this sack are introduced equal parts of powdered capsicum and ginger, covering the inner surface to a thickness equaling, perhaps, an ordinary blotting pad. The bag is then closed by sewing up the fourth side.

These little pepper-bags, dipped in water before using, are applied muslin side to the gum of the affected tooth; by this means constant and bearable stimulation can be kept up, as the medicament acts readily through the muslin; while the rubber of the other side being impervious, protects the mucous membrane of the lip or cheek. This device is as ingenious as it is useful.

The diagnosis of an abscess at the *bifurcation* of the root is often exceedingly difficult.

The diagnostic signs are, almost equal response to pressure in various directions; inability to use the tooth in mastication, and *movement* of the tooth, greater or less, in its socket. The liability to such form of abscesses is chiefly from anatomical formation in the lower molars.

The treatment consists in evacuation of the pus from the alveolar socket. This can sometimes be accomplished by trephining the alveolar plate into the bifurcation, but more commonly by drilling through the tooth from the pulp-cavity directly upon the abscess, and afterwards injecting it occasionally with dilute sulphuric acid (acid 1 part, water 3 parts.)

If a cure from medication is possible, it can generally be effected in this manner.

As a last resort, the tooth may be extracted, the abscess dissected from it (for the abscess will always come away with the tooth,) and the tooth replanted.

With the most skillful treatment, a considerable percentage of cases will result in failure and eventuate in extraction and loss.

An alveolo-dental abscess dissecting the peridentium from the cementum is generally associated with an anæmic, possibly a typhoid, condition, or with want of tonicity of the tissues generally. The marked local symptoms are sensitiveness to pressure, looseness of the tooth, and the oozing of pus from about its neck. The treatment of these cases is always difficult and often unsuccessful.

If the tooth be situated in the lower jaw, unless specially

valuable, early extraction is the safest plan to pursue. In the effort to save the tooth, the pns should, if possible, be diverted from the channel which it has established for itself to an opening made through the *alveolus* and *gum*. If the abscess be then treated with dilute sulphuric acid, and the peridentium with applications of chloride of zinc, a satisfactory cure may generally be expected.

Abscesses with external fistulæ through the cheek are rare, but a good prognosis can generally be given. The method of treatment will suggest itself from that indicated for other conditions.

In the lower jaw external fistulæ are not infrequent, gravity assisting materially to produce such an untoward result. If the subject be a female, the unsightly scar, which is the usual result, ever remains a disfigurement.

The sacrifice of the tooth giving rise to the trouble is not a necessity, for in a moderate percentage of cases the abscess may be successfully treated through the root. The external scar left from such an abscess is usually much less disfiguring if a cure is effected with the tooth in place; but unless it be especially valuable, it is safer, after the healing of the abscess, to extract to prevent recurrence.

The pulp-cavity and root should be thoroughly cleansed and disinfected, and then dressed with one of the medicaments (glycerine, oil of cloves, a saturated solution of salicylic acid in oil of cloves, dilute sulphuric acid,) as already recommended. By this treatment, provided the root be an accessible one, healthy granulations may be induced, and the abscess healed from the bottom.

For an abscess in connection with an inferior dens sapientiæ, situated in the parts in the angle of the jaw, the extraction of the tooth is always to be resorted to if it be possible of accomplishment. Often in such cases the tooth is but partially erupted, or the crown much decayed. This, with the swollen condition of the parts, and the consequent inability to distend the mouth, may present insuperable obstacles to extraction.

Such cases demand the most active treatment, with a view of inducing a discharge of the pus through the gums, or at the worst an external fistula.

In addition to what has been already recommended, poultices may be applied externally, incisions made, or such other treatment adopted as the exigencies of the case may demand. The danger consists in pus finding its way under the strong cervical fascia, and thence to the thorax.

In extracting for alveolo-dental abscess the after-treatment is often of great importance.

Should the sac come away with the root, the trouble is practically at an end; if it does not, unless properly cared for, a recurrence of the abscess may be looked for.

A solid clot forming in the socket will effectually confine the pus, causing a speedy renewal of all the symptoms, intense pain, rapid swelling, etc.

The diagnosis and treatment, although plain, are frequently wholly misunderstood, causing much needless suffering to the patient.

The socket of an abscessed tooth, after extraction, may be soothed and kept free from a hard clot by syringing occasionally with tepid water, or a mixture of equal parts of warm water and laudanum; or if a more active detergent is indicated, perhaps the best is a wash composed of one part of alcohol to two parts of *phenol sodique*.—*Dental Cosmos*.

ARTICLE IV.

Filling Proximal Cavities in Bicuspids and Molars.

BY J. A. W. DAVIS, GALESBURG.

Read before the Illinois State Dental Society.

Experience and observation have taught me that proximal cavities in bicuspids and molars are the most difficult cavities that we have to fill, in order to make them successful in saving the teeth.

I believe that I can safely assert that there are more failures in the fillings in these teeth by good operators, than any other class of fillings in the mouth.

The great difficulty of thoroughly filling these cavities seems to be universally acknowledged, and if I can only arouse thought and discussion that will lead to more thoroughness, and to greater success in the insertion of these fillings, I shall be satisfied. We have more large and difficult fillings to insert in this class of cavities than in any other location in the mouth, (and it is the large cavities in these teeth that I wish to call particular attention to in this paper,) and the nervous exhaustion that is inseparable from the faithful performance of our duty in these fillings, is, I presume, perfectly familiar to all. I have often deeply sympathized with patients in these long and tedious operations, and have long endeavored to make them as short as consistent with thoroughness, both for the benefit of the patient and myself.

The causes of so many failures in the fillings of proximal cavities in bicusps and molars are the following: 1st. A defective preparation of the cavity, especially the cervical margin. 2d. Injury to the margin in inserting the filling, by over malleting. 3d. A want of thorough adaptation of the filling to the margins of the cavity. 4th. Improperly finishing these fillings.

In the preparation and filling of these cavities, is it possible for us to obviate these causes of our failures? It may be impossible to do so in every case, but I am inclined to the opinion that we can do so in a far greater number of cases than we have hitherto been doing, if we will only adopt better methods and earnestly endeavor to be more thorough in every detail of these operations.

These cavities should be opened from the crown surface with a fissure-bur, if there is not an opening there already. Should there be no opening on the crown surface, a thin file may be passed between the teeth, and from this separation we may rapidly cut and open the cavity by cutting

down the enamel until the interior parts are entirely brought into view.

We should invariably apply the rubber dam in all cases, before preparation of the cavity is completed, so as to exclude all moisture, thereby enabling us to see that we get the margins all perfectly smooth.

I contend that no operator can prepare this class of cavities as perfectly without the dam as he can with it. Having the rubber dam securely adjusted so as to exclude all moisture, we proceed to remove all disintegrated dentine in the cavity. This being accomplished, the cervical margin should be cut away until a sound, solid, and a secure border is obtained, which should then be made as smooth as possible; an imperfect cervical margin being a very prolific cause of failure in these fillings.

I feel like urging extreme care in their preparation. We should not stop after a hasty and careless preparation and console ourselves with the delusive hope that it is all right, but we should in every case never stop short of an ever living consciousness that knows that this margin is prepared just as it should be, to avoid all danger from the recurrence of decay.

The buccal and palatal margins should next be cut away until a firm edge is secured, after which it should be thoroughly polished to facilitate the adaptation of the filling.

The cavity should now be so shaped as to permanently retain the filling. With suitable sized fissure-burrs and the engine we can very readily cut a groove or dovetail on each side of the cavity, if the tooth will admit of it; in some cases, where the dentine is very sensitive, I make two retaining pits on each side of the cavity, and follow up the fissure on the masticating surface, and make a retaining pit there unless both sides of the tooth are decayed, and if they are, I bridge across the crown surface, in nearly all cases of bicuspsids, also in some cases with the molars, so as to make the filling perfectly secure from removal by masti-

cation or any ordinary force that may be brought to bear upon it. There will very frequently be found in the cavities a deep undercut or overhanging projection of enamel at either the lingual or buccal corner, and sometimes at both; this should always be cut away, as it is almost impossible to so fill them as to avoid future fracture, and thus injury to the integrity of the entire filling.

Having the cavity properly shaped, and the margins all perfectly smooth and ready for the introduction of the filling, I now wish to call your attention to an appliance to aid in the filling of these cavities, that I have found to be very efficient in securing successful results, and one which greatly lessens the time and weariness both to myself and to the patient. I refer to the matrices introduced by Dr. Louis Jack, of Philadelphia, for filling proximal cavities in bicuspid and molars.

About a dozen pairs of these matrices are requisite to meet the varying cases that occur in practice; however, occasionally it will be necessary to have one of unusual size and form to meet special cases; when the space is very large, or when from fracture of the outer plate of enamel, a steel one will not remain in position. For this purpose one may be made of boxwood that will answer every purpose. Having, then, about a dozen pairs of these matrices, we select one of suitable size and shape, and with the pliers take it up and push it up between the teeth which are to be filled, until it presses pretty firmly upon the rubber dam and gum at the cervical margin, and impinges tightly between the teeth. It should now be wedged firmly against the tooth to be filled, with wedges of boxwood or other hard wood; these are to prevent it from moving while packing the filling. The matrix being properly adjusted to its place, the cavity is now ready for the reception of the gold.

It will be readily perceived that we have transformed this cavity from a compound proximal to a simple one by the use of this little matrix.

For commencing these fillings I generally use Williams' cylinders slightly annealed. If I do not start the filling from retaining pits, the cylinders used should just be large enough to maintain their places firmly when condensed. When I start from retaining pits I use No. $\frac{1}{2}$ and No. 1; after the retaining pits are perfectly filled, I take a cylinder long enough to reach from one retaining pit to the other. Great care should be taken to thoroughly adapt these first pieces of gold to the cervical and other margins, either with the mallet or hand pressure.

After we have the cervical margin well covered, the gold may then be annealed more and more as the filling progresses, until the cavity is pretty well filled, when No. 20 or 30 rolled gold should be used to finish the filling. Extreme care should be taken to consolidate the gold at all points as the filling progresses, paying particular attention to its solidity against the matrix where it comes in contact with the margins of the cavity. The filling being now properly introduced and condensed thoroughly, it only remains for us to remove the matrix and finish up the filling. It will be found if the selection and adjustment of the matrix has been correct, that very little filing and cutting down of the plug will be required, and if the packing has been carefully performed, that the gold will be solidly condensed at every part of the filling.

The finishing of the filling does not differ from the usual method pursued. I usually open still farther the lingual space, which is easily accomplished with suitable files and corundum disks. The peculiar form of the depression in the matrix produces a space which may be increased at pleasure. In many cases where the tendency to caries is very great, we should cut quite freely from the inner plates of enamel, doing this after both the adjoining fillings are put in, cutting down both gold and enamel together, allowing the fillings to touch only at the prominent outer parts. The result is then, an imitation of the exceedingly oval bicuspid; the immunity of which from decay all must

have observed. Having thus far finished the filling with files and disks, I next take strips of emory cloth cut to the proper width, and with these polish the proximal margins, first using Nos. 1 and $\frac{1}{2}$, and finally finishing with crocus, which gives a fine finish and a beautiful polish. I would urge care in finishing the cervical margins, never stopping our efforts at this point until we positively know that every part of the margin is perfectly smooth, with no projecting gold to induce a recurrence of decay, but on the other hand, we should continue to cut and polish at this point until the margin is perfection itself.

Then, if this margin was thoroughly prepared before the filling was introduced, and if the filling was perfectly adapted to it without injuring it by over malleting, and finally, if the cervical margins are perfectly dressed and polished, I think we have obviated the causes of failure in these fillings to a great extent.

I trust that those who have not tried this method of filling proximal cavities in bicuspid and molars, will do so at their earliest convenience. Simplicity of methods and greater success in the performance of our work are the two leading wants of our profession to-day. Notwithstanding the number of faithful operators is increasing, and the standard of operations is rising, the manner in which fillings are made by two-thirds of the dentists of this country is a reproach to us as a profession, and a disgrace to the age in which we live.

For the better serving of our patients, I have a hope that step by step the methods of filling may be made easier, thus within the capacity of a greater number, and more sure, until at length all may be able to reach very near perfection in this very difficult operation.—*Transactions.*

ARTICLE V.

Amalgam for Tooth Filling.

A forceful argument in favor of the use of amalgam under many conditions appears in our excellent contemporary, the *Dental Cosmos* for December, from the pen of D. Van

Denburgh, of San Francisco. The writer was educated in the Parinly, Harris, and Westcott school of opinion that amalgam was unfit for tooth filling. His use of it began in little faith or hope that it would prove serviceable; and the fact that amalgam had won a place of usefulness in his practice is accounted evidence of its merits. He says: "Many of my own teeth were filled by C. A. Harris, of Baltimore, thirty years ago. A few more in the half dozen succeeding years were filled by Amos Westcott, of Syracuse, N. Y. One alone of these fillings failed, and that repeatedly within the first half dozen years. I would not have the tooth extracted, as advised; and, after having the decay excavated, I prepared a putty of tin, silver, and quicksilver, and myself placed it in the cavity of the unfortunate lower molar tooth. For more than twenty years it has done me as good service as its brighter neighbors. But the point of interest is, that it has done this where gold skillfully used had failed. After a year or two of good conduct by this amalgam filling, I began to feel some interest in it, and in various ways in my laboratory to test some amalgam mixtures.

"I occasionally filled in some mouths (where I might have opportunities afterwards to watch it) some dilapidated tooth that would otherwise have been extracted, some soft or poorly cared for teeth that fillings of any kind were least likely to preserve, and some difficult cavities that were hard to fill satisfactorily with gold. With such a beginning I went on experimenting, testing and comparing, and now, after twenty years, I still use it, and nearly as often as I use gold."

The mixture used by Mr. Van Denburgh is composed of coin silver, 4 parts; tin, 5 parts; and mercury, *q. s*. The tin is added to prevent the shrinkage experienced with an amalgam of silver, and to form a mass sufficiently hard to resist mastication. The amalgamation is a matter requiring great care and skill, and thorough washing with alcohol is essential.

In the earlier years of his use of amalgam, Mr. Van Den-

burgh thought he occasionally observed so much superficial oxidation, as, after a considerable time, to injure the edges of certain fillings, and produce a crevice that favored the renewal of decay; but longer experience has taught him that the fault was his own in unskillful preparation and use of the material. He believes now that amalgam will resist all destructive agents in the mouth as well as any dentine or enamel can do; but a caution may be necessary to the inexperienced, not to use so much or so little quicksilver as to make it crumble under mastication; or to attempt to use the mixture in any case after it may be perceived that the hardening process has begun. If this process be once interfered with, though it will be renewed in a degree, no reliance can be placed upon the mixture. A good amalgam filling will not stain any tooth. That anything hurtful to the most delicate or diseased organization can be found in it, or produced from it in the mouth, seems to him the most fanciful nonsense. Any quantity of the metal that might be placed in the mouth would not probably lose by trituration or chemical action a perceptible amount of any or all of its ingredients in a lifetime; and even if such loss were to occur in any way or form, he knows of no reason to suppose that it would be hurtful if taken into the stomach.

As regards durability, Mr. Van Denburgh believes that properly prepared amalgam, skillfully inserted, provides as lasting a filling as can be made with gold, and its advantages in saving time and pain are very great. He says:

"Five minutes are sufficient to insert any amalgam filling, and nothing more is required to keep the work dry than a napkin or a roll of paper. But not only am I convinced that amalgam, in respect to usefulness and durability, may in any case be as good as gold; I am equally certain that in some cases it is superior, and for the reason I have mentioned, of its more kindly contact and healing qualities in connection with soft dentine. As a mechanical stopping, where a tooth is much weakened by the loss of substance, amalgam brings no strain as gold does; on the contrary, it

becomes a binding and supporting protection. Much of the solid substance of teeth is often cut away to secure the better insertion of gold that would be unnecessary for amalgam. Any one with strong masticating organs can 'chew up' a gold coin; so, the most perfect gold filling, when made a projecting portion of a tooth, and subjected to severe mastication, will spread and finally break away. Amalgam has a greater power of resistance, and in many such cases will prove the most serviceable grinder."

It is but fair to note that in the same number of the *Dental Cosmos*, Dr. William H. Truman, of Philadelphia, critically reviews the question of amalgam fillings, and arrives at conclusions much less favorable to their use, though he is far from condemning their use under all conditions. The materials proposed in place of gold will no doubt amply repay by increased durability any extra care in their preparation and insertion; but they all, he thinks, have inherent defects which will have to be overcome before they can be called reliable. They have their place, and probably have not been used as much as they might. Nevertheless, "gold has been used too long, and with too much success, to be abandoned before a better method is at hand. We would ask every professional brother before accepting the teaching and adopting the practice of this new departure, to reflect a moment on the past, and see how often these tidal waves have swept over the profession. At one time it is arsenic, at another amalgam; twice sponge gold has rolled over us, leaving many an aching void; and no doubt the indiscriminate use of the mallet and cohesive gold, the reckless building up of teeth without regard to their position or character, has done much to secure this idea the warm reception it has met."

Accordingly, Dr. Truman advises caution before cutting loose from so faithful and well-tried a friend and risking professional reputation on "the uncertain ground of plastic fillings." The fault *may* lie with the operator, and not with the material used.—*Scientific American*.

ARTICLE VI.

A New Elastic Gum.

A rival to India rubber and gutta-percha has been found in a new elastic gum which has been named Balata. This is the milky sap of the bully-tree that flourishes on the banks of the Orinoco and the Amazon in South America. The operation of winning the gum is similar in every respect to that employed with caoutchouc and gutta-percha. It resembles gutta-percha so closely in its general properties that much of it is shipped from Guiana and sold yearly for gutta-percha, although it has many points of superiority. It is tasteless, gives an agreeable odor on being warmed, may be cut like gutta-percha, is tough and leathery, is remarkably flexible and far more elastic than gutta-percha. It becomes soft, and may be joined piece to piece like gutta-percha, at about 120° Fah., but requires 270° Fah., before melting (higher than gutta-percha.) It is completely soluble in benzole and carbon disulphide in the cold. Turpentine dissolves it with the application of heat, while it is only partly soluble in anhydrous alcohol and ether. It becomes strongly electrified by friction, and is a better insulator of heat and electricity than gutta-percha, on which account it may find considerable application for electrical and telegraphical uses. Caustic alkalies and concentrated hydrochloric acid do not attack it, but concentrated sulphuric and nitric acids attack it as they do gutta-percha, which it closely resembles in all other properties.—*Polytechnic Review.*

ARTICLE VII.

Lancing the Gums.

Prof. Gibbons, in an address before the Graduating Class of the Pacific Medical College, which is published in the *Pacific Medical & Surgical Journal*, says:

“Among the ‘lost arts,’ there is one the abandonment of which I condemn without qualification. I refer to the

cutting of the gums in dentition. In discarding this simple expedient, our profession have thrown away a safe and valuable adjuvant in the management of infantile disorders. The only objections to it are that it gives pain, that it hardens the gums so as to retard the advance of the tooth, and that it endangers hemorrhage. So far from giving pain, it relieves pain, and more still the intolerable itching which children suffer while teething. If hardness result from the cicatrization, it will facilitate the escape of the tooth instead of retarding it; for every tyro knows that a cicatrix is absorbed under pressure more readily than normal tissue. And as to the danger from hemorrhage, fifty years of constant and abundant experience in my own practice, and observation of the practice of others around me when the operation was universal, have failed to bring within my knowledge a solitary instance of serious hemorrhage caused by lancing the gums. On the other hand, again and again have I seen the infant, when fretting and twitching and starting as if on the brink of a convulsion, fall into a tranquil sleep immediately after the process. More than once have I known the child close its jaw to press the lancet into the itching. One child I remember who would run to meet me as I entered the house and open its mouth to invite what experience had taught it, would relieve its suffering.

By lancing the gums I do not mean slicing off the prominence, nor yet making a crucial incision. These are superfluous, if not barbarous procedures. It is sufficient to scarify the swollen tissue in one direction, to relieve the tension and remove a few drops of blood from the engorged vessels."

EDITORIAL, ETC.

Amalgam for Tooth Filling.—The *Scientific American* in reviewing Drs. Van Denburg's and Truman's articles on "Amalgam" published in the November number of the *Dental Cosmos*, the former favoring the use of amalgam under many conditions, and the latter not being so favorable to its use though not condemning it under certain conditions, remarks as follows :

"So long as the filling of teeth with gold remains a tedious and painful operation, the public generally, since they have to bear the pain, will naturally prefer the employment of plastic fillings, if such fillings can be made to do reasonable service. Can they?

"On this point the professional world is sharply divided, one school of dentists holding that nothing but gold should be used in any case, the other that cheaper and more easily inserted fillings are in many instances, if not always, better than gold. So marked a difference in professional opinion on a point of such vital importance would be a professional disgrace, were it not for the circumstance that the human mouth presents conditions so variable and uncertain that it is impossible to decide in many cases whether the success or failure of an operation is due to the skill of the dentist or his lack of it, to the nature of the filling, to the organic life and condition of the patient's teeth, to the character of the local secretions to which the work is subjected, or to other complications impossible of detection or control. Some salivas seem capable of dissolving anything; other mouths will hospitably receive fillings that could not be trusted at all under the conditions usually prevailing; and even in the same mouth variations in the patient's general health may cause the sudden failure both of filled teeth and of previously sound teeth, that have successfully stood the test of years of usefulness.

"Such being the case it is not surprising that dentists of equal intelligence and skill should be found in opposition.

Probably the question of gold *versus* amalgam will remain in professional chancery until some lucky inventor hits upon a composition approximating dentine and enamel in physical properties, with the ability of pure gold to withstand the action of every possible food or drink or buccal secretion. Meantime it is interesting to watch the shifting aspect of the professional battle—provided one is not called upon to decide upon a filling for his own failing teeth."

The review is to be found in the present number of this JOURNAL.

New Method of Attaching Gold Crowns to Natural Roots of Teeth.—Dr. A. S. Richmond has recently visited Baltimore for the purpose of introducing Dr. C. M. Richmond's new method of forming and attaching artificial crowns of gold to natural roots without the use of adhesive gold foil. The crowns consist of twenty-two carat gold for molar and bicuspid roots, so shaped as to resemble those of the natural teeth and attached to the necks of the roots so firmly that they can be antagonized with teeth in the opposite jaw and withstand the force of mastication, and at the same time protect the roots from attacks of caries.

The artificial incisor and cuspid crowns differ from those of the bicuspids and molars in not being wholly composed of gold; an ordinary plate tooth being used in connection with the gold band which forms the bond of attachment with the natural root. Should this method prove as durable as the inventor claims for it, roots which are otherwise useless, may be rendered serviceable and sightly. Dr. Richmond occupied the greater part of two days in demonstrating this new method to the large class of the Baltimore College of Dental Surgery, the patients being students of the College.

He has also instructed a number of dental practitioners of Baltimore in this new method.

Uranine—A New Aniline Color.—We have received, with the compliments of the *Scientific American*, a specimen of the newest, and what is claimed to be the most remarkable, of all the

aniline group of coloring substances, all of which are extracts from coal tar. This color is called "uranine;" it produces one of the most brilliant and translucent shades of emerald greens which it is possible to conceive of, and is said by the chemists to be the most highly fluorescent body known to science. Its coloring power and diffusiveness are so great that it is claimed that a single grain of the powder will impart a marked tinge to eleven barrels or 350 gallons of water. A few atoms of it sprinkled upon the surface of a tumbler of water very soon fills the glass with what appear to be fresh and delicate rootlets of moss of the most vivid yet delicate green. In some lights the hues have a peculiar pearly lustre and translucency, and many of the transient lights of water tinged with it have all the evanescent brilliancy and variety of color of the opal. This new color, the proper mordant for which is said to be glycerine, promises to become one of the most important and valuable dyes known in the arts.

Vick's Floral Guide.—Of the many Guides and Seed and Plant Catalogues sent out by our Seedsmen and Nurserymen, and that are doing so much to inform the people and beautify and enrich our country, none are so beautiful, none so instructive as *Vick's Floral Guide*. Its paper is the choicest, its illustrations handsome, and given by the hundred, while its Colored Plate, representing in natural colors a group of paeonies, is a gem. This work, although costing but five cents, is handsome enough for a Gift Book, or a place on the parlor table. Published by James Vick, Rochester, N. Y.

The flower and vegetable seed of Mr. Vick, which the Editor of this JOURNAL has been using for a number of years are very superior, and cannot fail to give satisfaction to all who try them.

MONTHLY SUMMARY.

Diffusion of Carcinoma by the Nerves.—Dr. Calmiatti, who has already published important articles on the pathological histology of the nerves, presents in the *Revista Clinica di Bologna*, an interesting case illustrating his theory of the diffusion of carcinoma by the nerves.

The patient was a man forty years of age, who had previously enjoyed good health, but recently had been attacked with neuralgia of the left cheek, corresponding to the inferior molars. An examination showed that there was a considerable tumor on the inner side of the gum. This tumor, the size of a hen's egg, was removed, and at the same time disarticulation and resection of the jaw as far as the left canine tooth was practised. Though the wound healed readily, the severe neuralgia continued.

The tumor proved to be a carcinoma. It involved the inferior dental nerve, which was followed for more than two centimeters, and into its canal in the bone. There was connected with the tumor and the bone an enlarged and indurated lymphatic gland, belonging to the suprahyoid region. This was also removed. The posterior portion of the nerve, when removed from the canal, was found considerably enlarged.

According to the theories of Robin and Key and Retzius, the nerves contain two species of connective tissue: the *epi-neurium*, and the *peri-neurium*, with its appendix the *endo-neurium*. The *epi-neurium* connects the bundles which form all nervous trunks, and appears to envelop them; the *peri-neurium* and *endo-neurium* form integral parts of each bundle. Their connective tissues consists of small membranes, within which are the so-called *peri- and endo-nervous lymphatic spaces*, but which have nothing to do with the common lymphatic system. These small membranes which, like the nerve-bundles, maintain a cylindrical form, are arranged in a circular manner at the periphery of the bundles, and are connected and held together from place to place by membranous lamellæ. Hence these *peri-nervous lymphatic spaces* are multiple and always communicate one with another. The membranes constituting the *endo-neurium*, which arises from the *peri-neurium*, pass around each nerve-fibre in such a manner as to form circumscribed *endo-nervous lymphatic spaces*, which are also continuations of the *peri-nervous spaces*. The ultimate arrangement of the above-mentioned membrane is such,

therefore, that every fibre is suspended in a symphatic space. In the case mentioned we have to take into consideration the lymphatic current which flows in the special canals of the perineurium and the endoneurium, a current which is in direct communication with the spinal and cerebral subarachnoid spaces, and, by means of these, with the ventricles of the brain, through which the carcinoma cells may pass indefinitely.

The author states that he saw in the section of the dental nerve an abundant infiltration of the carcinoma cells, which were diffused through the perineurium and endoneurium spaces. He also states that this is the second case in which he has found the carcinoma diffused through the inferior dental nerve. The diffusion of the disease was by the nerve solely.—*Lo Spemintale*, March, 1878.

To Blister the Skin Quickly.—Into a watch-glass, pill-box, or any similar small receptacle, pour ten drops of concentrated water of ammonia (aqua ammonia fortior); cover the liquid with a bit of linen or a little cotton wool, and at once apply the cup upon the skin where the blister is required. Press so that the vapor is confined to the inside of the vessel. A red circle will directly be observed outside, when it will be certain vesication has taken place. Half a minute or so is all the time required to obtain the result. The blister may be dressed in the usual manner of dealing with a blister from cantharides. Acetic acid, concentrated, applied to the skin will also, in a few minutes, produce vesication. In each case evaporation should be prevented by some suitable covering. Bibulous paper, slightly wetted with a little of the ethereal extract of cantharides, instantly applied to the skin and covered with a piece of adhesive plaster, will answer for the same purpose.—*Ohio Med. Recorder*.

An Early Symptom of Tabes Dorsalis.—Dr. Berger has a note in the *Centralblatt für Med. Wiss.*, relating to an early symptom of tabes dorsalis, which is described as consisting in the disturbance of the preception of pain of such a kind that stimuli of slight intensity, as well as tactile impressions of a slight painful kind, such as needle-pricks, are perceived normally; but that more severe and often very strong stimuli produce no greater pain. This analgesia in respect to excessive stimuli may be present before other symptoms of tabes appear, and is of semeiotic importance. This peculiarity, as a common rule, is especially perceived in the skin of the lower extremities, and may finally be observed on the whole cutaneous surface, and even on the mucous membrane. It appears to be a symptom depending on an initial lesion of the gray substance.

Deaths from Anæsthetics.—The English medical Journals of recent date record a death each, from ether, methylene, and chloroform.

That from ether occurred at the London Hospital, in a patient about to be operated on for hernia. Ether was administered by one of the house-surgeons; the patient was readily brought under its influence. There were no untoward symptoms of any kind; the examination was proceeded with. The man breathed quietly and regularly for a few minutes, and then gave one sudden catching effort at inspiration, and died, in spite of every effort to save him. It is noteworthy that his pulse continued to beat for about thirty seconds after breathing had ceased. At the autopsy the heart was found firmly contracted. There was no strangulation, though the gut showed marked traces of having been tightly constricted.

In the death from methylene the victim was a retired officer of 40 years of age, in apparently perfect health. The death was perfectly sudden and inexplicable, and it shows that this anæsthetic is, like chloroform, a poison to some persons of a peculiar idiosyncrasy, and will cause death without any apparent physical reason.—*Med. and Surg. Reporter.*

A New, Cheap and Self-generating Disinfectant.—Under this title, Dr. John Day, of Geelong, Australia, recommends for use in civil and military hospitals, and also for the purpose of destroying the poison-germs of infectious diseases, a disinfectant composed of one part of rectified oil of turpentine and seven parts of benzine, with the addition of five drops of oil of verbena to each ounce. Its purifying and disinfecting properties are due to the power presumed to be possessed by each of its ingredients, of absorbing atmospheric oxygen, and converting it into either peroxide of hydrogen, or ozone. Articles of clothing, furniture, wall paper, carpeting, books, newspapers, letters, etc., may be perfectly saturated with it without receiving the slightest injury, and when it has been once freely applied to any rough or porous surface, its action will be persistent for an almost indefinite period. This may, at any time, be readily shown by pouring a few drops of a solution of iodide of potassium over the material which has been disinfected, when the peroxide of hydrogen, which is being continually generated within it, will quickly liberate the iodine from its combination with the potassium, and give rise to dark-brown stains. It may be applied with a brush or a sponge, or, if more convenient as is the case with certain articles, such as books, newspapers and letters, it may be simply poured over them until they are well soaked; they may then be allowed to dry, either in a warm room or in the open air.—*New Remedies.*

Poisoning by Chlorate of Potash.—A child of Dr. Kauffman, Schuylkill county, Pennsylvania playing doctor with her little brother and sister, found a box of chlorate of potash, of which, after administering various and unknown quantities to her patients, took about half an ounce herself. The child, who was about two and a half years old, commenced vomiting in about an hour, and died in seven hours after taking the medicine. Beside the emetic, also hydro-drastic effects were observed, the child dying of gastritis or inflammation of the stomach and bowels. This case teaches us to be very careful in using and keeping chlorate of potash. Under no circumstances whatever should it be administered in a crystalline form, as it seems to be in this form a violent irritant to the mucous membrane. The child was given as much water and cream as she could drink, and to the last she vomited crystals of chlorate of potash.—*American Journal of Pharm.*

Warning Against the Hypodermic Use of Morphia.—Dr. Levinstein, of Berlin, says, in his late work on the "morphia mania," *morphiumsucht*, that it is generally caused by hypodermic injections of the drug, given by the medical attendant during illness, to relieve pain, and continued by the patients themselves after the actual need of it has disappeared, for the sake of the mental excitement it produces. The danger involved was not generally suspected during the first years of the use of the new means of administration, but the existence of the *Maison de Sante* under the medical direction of the author, which is devoted to the cure of sufferers from this craving, shows how large its evil effects must already be. The sufferers feel quite well for a certain time while using the narcotic, but before long evident symptoms of disease appear. The patients become emaciated, the complexion ashy or dark red, the eyes lack lustre, and vision is often deranged; thirst, nausea, and loss of appetite, constipation, and the secretion of albumen by the kidneys, impotence, a form of delirium tremens different from that caused by alcoholic excesses, intermittent fever, and great derangement of the moral character, are among the morbid appearances produced.—*Med. and Surg. Reporter.*

Female Physicians.—The following facts, which are taken from *l'Avenir des Femmes*, a paper edited by M. Leon Richer, may prove interesting to our readers:

The Medical Faculty of Boston apparently deserve the credit of being the first to receive female students; this was in the year 1848. Zurich admitted its first female student in 1862; and in Russia, the *Ecole de Medecine de Saint-Petersbourg* was

thrown open to women in 1872. In Germany, the Universities have only in rare instances granted diplomas to women. The first female to receive the diploma of Doctor of Medicine in that country was Mlle. von Siebold. Since 1874, Leipsic has graduated three female doctors. In Italy, the higher schools were only established in 1864, the municipality of Milan taking the initiative; and up to the present time only one woman has been granted a diploma. This was Mlle. Giraldi, who received the degree of Licentiate of Letters in Naples. In France, the first "bacheliere" (Mlle. Daubie) was received in 1861, and the female physician (Mde. Garret) in 1870. The University of London has been the most recalcitrant. It is only since the vote of the 15th of last January that women have been admitted to the examinations for all the diplomas, viz., those of medicine, arts, sciences, and law.—*The Medical Record*.

On the Absorption of Lime Salts.—The opinion of physicians concerning the therapeutic effect of lime salts differ widely. Some think that they act only *locally* upon the mucous membranes, the secretions and contents of the intestines, but that they have *no general* action upon the system. Others consider them as powerful remedies in all so-called dyscrasies. These differences in opinion caused the author to experiment with animals, to see if lime salts *enter the system*, and become excreted with the urine. He found that soluble lime salts, when brought into the body, become *absorbed*, though only to a small degree. We may therefore expect that a deficit of lime in the body may be balanced by the introduction of a soluble lime salt in a sufficient quantity, provided the general condition of the body favors a return to the standard. The administration of these salts in the proper diseases seems therefore to be well founded.—*Dr. Perl, in Virchow's Arch.*

The Skulls of Women—M. Lebon, in a communication made to the Congres d'Anthropologie in Paris, pointed out that, while the relative volume of the skull, compared with the rest of the skeleton, has increased with the progress of civilization, the difference in size between the skulls of men and women is also much less in the savage than among the civilized races. This difference was admitted by the ethnologists present, and was explained by the President, M. Broca, on the ground that among the primitive races women led much the same lives as men, and took an equal part in the struggle for existence. According to these anthropological data the "protection" of women and their exclusion from professional struggles has ended in lessening the cranial capacity, therefore presumably the brain-power.—*Medical and Surgical Reporter*.

Healing of Pieces Separated from the Human Body.—Two cases occurred in the clinic of Dr. Maas, in which pieces separated from the body were replaced, and had united. In both cases the nose was the portion injured, and in both the epidermis sloughed off, leaving the rete malpighii exposed. The pieces were sewed on with fine sutures, between which strips of adhesive plaster were applied, and, over all, oiled silk and cotton batting, to prevent evaporation and maintain warmth. The two following rules are drawn: 1. The piece separated must be kept warmed to the temperature of the human body. 2. It must be replaced, whether with sutures or adhesive plaster, or both, directly the flow of blood ceases. The nutrition of the piece is supposed to be maintained by the speedy re-establishment of circulation through its vessels.—*Cincinnati Lancet and Clinic*.

Conservative Surgery.—Dr. Borlee claims that a simple dressing of charpie and compresses wet with spirits of camphor, in connection with thorough drainage, deserves the preference over Lister's method. With this dressing erysipelas scarcely ever occurred, the suppuration, even when the wounds were extensive, was slight, and the secretion did not become offensive. He illustrates the method by the histories of eight cases, comprising one case of "loose cartilage" in the knee joint, removed by excision, with perfect recovery, two cases of severe, complicated fracture of the leg, an amputation and an exarticulation of the upper extremity, and extirpation of tumors.—*Centralblatt f. Chirurgie*.

Disadvantages of Salicylic Acid as a Mouth-Wash.—Dr. Buch, of St. Petersburg, has found that even a very weak solution of salicylic acid is injurious to the teeth. After it has been used for some time, the teeth appear softer, and feel as if they were covered with some gritty substance. This is due to the acid combining with one or more of the constituents of the teeth, the surface of which becomes soft and granular. Dr. Buch believes that a salicylate of lime is formed, which adheres to the teeth, and is the cause of the peculiar sensation when they are rubbed together.—*Edinburgh Medical Journal*.

Heavy Sentence of a Dentist.—The Court of Assizes of the Seine-Inferieure, France, recently condemned a dentist named Paul Levy to ten years' imprisonment for the crime of rape. His victim was a young girl, 20 years of age, and the crime was committed while she was under the influence of an anæsthetic. Levy is married and is the father of three children. He has practiced his profession for some time in the city of Lyons.—*Medical Record*.

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ARTICLE I.

Inflammation, Abscess and Necrosis: their Cause and Treatment.

BY. J. M. PORTER, D. D. S., TOLEDO, OHIO.

Delivered before the Dental Class of the University of Michigan, November 18th, 1878.

GENTLEMEN:—The pathological conditions to which I shall invite your attention are so intimately associated that I can not discuss any one of them without including the others. And although they are hackneyed subjects, they are nevertheless, worthy your attention, both on account of their importance as connected with your daily practice, and because of the fact that their causes and treatment are but indifferently understood by the average dentist.

First, inflammation. This term has been used from a very remote period, to denote collectively, the heat, pain, redness and swelling, which are the four chief characteristics of the pathological conditions, known by the above title. The redness, heat and swelling are physical signs, and these

more certainly prove the existence of this peculiar diseased condition, than does pain, which is a symptom depending upon the vital property, sensibility, and is often present when inflammation does not exist. For instance, in neuralgia, gastralgia, perforated intestine, etc. So long as the excessive pain lasts, all the functions suffer; faintness and exhaustion are apt to ensue, and, if no relief comes, the prostration may be fatal. Here, to mitigate or remove the pain, is the first and pressing indication. On the other hand, pain may fail to occur when inflammation is present, depending, as it does, upon the natural sensibility of the parts, the degree in which determination of blood predominates, and the tension or pressure induced. The severest pain arises, when all these circumstances co-operate, as in the inflammation of the pulp of a tooth, the sheath of a nerve, or the lining of a bony canal, like the auditory meatus. In other cases, the pain is chiefly felt when the inflamed part is pressed upon or stretched. Thus, the pain of peritonitis is felt, when the abdomen is compressed, or when its walls are strained, as in coughing; and likewise, the stitch of pleurisy is felt, on taking a full breath. Many other similar examples might be mentioned.

This condition known as inflammation, is often preceded by two other conditions, known as congestion and determination of blood. Congestion is characterized by an excess of blood in the diseased part, with diminished motion of that blood, and the latter feature distinguishes the condition from determination of blood, which is also characterized by excess of blood in the part diseased. But instead of the motion of the blood being diminished, as in congestion, it is increased. Another prominent distinguishing feature in congestion, is the fact that the arteries are not enlarged, as in determination of blood and inflammation. Congestion may be caused in various ways, the most frequent causes being over excitement of the vessels, by any influence which acts as an irritant; such as poisonous gases, or mechanical contact with abnormal substances. These two include the chief causes

of congestion, which you will probably be often called upon to treat. The most important measures to be adopted for the removal of congestion, are such as are addressed to the causes of the disorder. Pressure may be used as a remedy. This forms a chief part of the useful operation of bandages, adhesive plasters, and even of poltices, in various external congestions. Friction is a modification of pressure, especially suited to some forms of congestion, being calculated to communicate the motion that is defective, as well as to support the weak vessels. Another dose of remedies for congestion, comprehends such influences as promote the contraction of the dilated vessels, by augmenting their contractility or tone. It is in this way that astringents and cold operate. The utility of astringents in congestion is limited, by the fact that they contract the arteries, more in proportion, than the capillaries and veins, which are the chief parts distended. Hence their action may still further arrest the motion of the blood, and increase the difficulty. Depletion is doubtless the safest and surest remedy for such cases as you will be called upon to treat. The same remedies are applicable to determination of blood; the difference in treatment being, that cold applications are more likely to produce contraction of the arteries, which are, in this disease, the portion demanding special attention. Inflammation may be said to comprehend both of the other conditions, to which I called your attention, and in addition, is a still further deviation from the natural condition. The pathological definition, already given, to distinguish inflammation from the other conditions, (in one of which we have increased, and in the other diminished motion of the blood,) is further illustrated by the strong pulsation of arteries leading to the inflamed structure, and in the stagnation of much blood in the structure. In addition to the pathological definition, the outward character of inflammation may also be briefly defined by the four signs, which from the time of Celsus has been considered distinctive of its presence, and to which I have already referred, namely—redness, heat, pain and swelling.

These symptoms are, it is true, sometimes produced by congestion, and by determination of blood, but in a degree less marked, and for a shorter time, than in inflammation. And although there are cases and forms of inflammation in which it is not possible to detect all these marks, they may still be said to constitute its most general character. In common with other varieties of local hyperæmia, inflammation owes the production of redness to the excess of blood in the part, and this redness is heightened by a peculiar concentration of the blood corpuscles in the inflamed vessels, and this is also the cause of some of the results of the process. As in determination of blood, the heat and pain are in part due to the increased motion of the blood, but they are exaggerated by the motion being opposed by obstruction. As in other forms of hyperæmia, the swelling arises partly from over-distention of the blood vessels, and partly from effusions from them, but these effusions in inflammation differ from those of congestion and simple determination, for they depart still farther from natural quantity and quality. The local exciting causes of inflammation, comprehend irritants, whether mechanical, chemical or vital. In the practice of dentistry, the first named may be regarded as the chief cause. Poisons also tend to produce local inflammation, and indirect causes are of common occurrence. For instance, such as first produce congestion, which subsequently becomes inflammation. Inflammation is also distinguished from congestion, by the more abundant effusions, the more florid hue of the redness, the stronger beating of the arteries, the augmented quantity of blood flowing from the veins, indicating increased motion of blood instead of diminished.

The foregoing considerations warrant the conclusion, that the process of inflammation is essentially more complex, as well as further removed from the natural state, than either congestion or determination of blood; that it includes, in fact, both of these conditions, together with certain changes in the blood within the vessels, and leads to further results, more extensive and varied than those that follow from con-

gestion and determination. There is increased motion, or determination of blood, to the affected part, with a more or less obstructed flow through it; the force of the increased flow being partly expended on the arterial portions of the obstructed vessels, and partly diverted into the collateral channels so abundantly supplied by the anastomosis of vessels. The obstruction in the vessels in the inflamed part, seems to be due to several circumstances, which vary considerably in different forms and degree of inflammation. Thus in those which begin with congestion, the obstruction may depend much on the increased mass of blood in the distended capillaries, and the impaired elasticity of their coats; and in part on the diminution of the osmotic force which naturally favors the passage of blood through the capillaries. Changes in the blood probably ensue sooner or later in all instances, and tend to increase the obstruction; but it is when the inflammation originates in direct irritation, as from a thorn in the skin, or a bruise, or wound in the flesh, that the blood in the vessels, seems most speedily to become a cause of obstruction, even in opposition to an increased current directed on it, through the enlarged arteries, and of these blood changes, a diminution in the osmotic properties, may be one, the formation of pale adhesive granules and compound cells, is another, possibly the agglomeration of the red corpuscles may be a third; and the result of this co-operation is, that more or fewer of the capillaries are obstructed by a mass of red and white corpuscles, so amalgamated, as to be no longer distinguishable. It is this combination that leads to the changes which characterize inflammation, and which, in extent and variety, exceed the changes from any other kind of hyperæmia. The effusions from inflamed vessels, are, at an early period, much the same as those produced by tense congestion and determination of blood, but they commonly occur in greater abundance, contain more animal, fatty, and saline matter; and, as the inflammation advances, sometimes present appearances not found in cases of mere congestion or determination. Thus

the effusion at first is a thin serum, causing swelling in complex textures, accumulating in the dependent parts of serous cavities, or diluting the secretion of the more simple mucous membranes. But soon fibrine is also effused, a part of which may concrete into coagulable lymph, or still remain dissolved, as in the liquor sanguinis. Fatty matter is also present, both in the liquor sanguinis, and in coagulated fibrine. Thus an inflamed pleura becomes coated with film of lymph, and the clear body effused into the sac when removed from the body sometimes spontaneously separates into a fibrinous clot and serum. In mucous membranes, there may be a thickening of the submucous texture, and the mucous secretion often becomes unusually viscid. The salt taste of the expectoration in the early stage of bronchitis, denotes the increase of saline matter in it. The presence of the chlorides in the substance of an inflamed lung, has been shown to correspond with their absence from the urine in pneumonia. Thus the inflamed vessels seem to acquire for the time being new excretory action. In addition to the above, inflammatory effusions generally contain the solids natural to the part, such as mucous globules, epithelium scales, epidermis and also blood corpuscles. For want of sufficient time, I am obliged to pass on to the consideration of the results or events of inflammation. Inflammation may result in resolution, effusion, suppuration, or gangrene. Did my time permit, I would be glad to go into the details incident to these different results; but I can only discuss one of them, namely—suppuration. This term signifies the formation of pus as a product of inflammation. Pus is an opaque, greenish or yellowish-white liquid, of creamy consistence, and comparatively odorless. It is chemically composed of water, duetoxide of protein forming the cell walls, tritoxide of protein and albumen in solution, fat, extractive matter, and the same salts as those in the blood. The circumstances which determine suppuration as a result of inflammation, are chiefly a certain intensity and duration of inflammation, the access of air to the part, or a peculiar

condition of the blood. Intensity and continuance of inflammation comprise the persistence of the two chief elements in the process, determination of blood and obstruction. The access of air to a wound, or to a serous membrane, is well known to promote the formation of pus.

A limited access of air to a large quantity of pus, leads to a decomposition of the matter, and the production of sulphuretted hydrogen, which acts as a deleterious poison on living structures. That a peculiar condition of the blood promotes the occurrence of suppuration after inflammation is obvious, from the readiness with which all wounds, scratches and pimples then fester, and with which inflammation of no peculiar intensity, leads to the early formation of pus in different structures. In most cases the process of suppuration is limited by solid effusion, which may be the remains of the earlier product of the inflammation, or it may be thrown out expressly for the purpose of defending the adjoining structure from the operation of the pus, evidently so noxious a matter. A collection of pus thus circumscribed is called an *abscess*. The treatment of *abscess* is what I wish to call your particular attention to. Not because you have not had this subject thoroughly ventilated by lectures and clinical demonstrations, but because of the difficulty you will probably encounter in treating abscess, and also, because to be familiar with treatment in early practice, is advantageous. After an abscess has been opened, it will continue to discharge pus for an indefinite time, depending upon a variety of conditions, some of which will be under your control. In a healthy subject, a process of healing takes place by an increased effusion of lymph, throughout the interior of the abscess, and the growth of new vessels in this lymph in the form of granulations. Pus is still formed, by the degeneration of the superficial layer of exudation corpuscles, and a free vent must be given this pus, until the growth of the granulations, and the contraction of the walls, shall have obliterated the cavity of the abscess. To produce this return to an approximation to healthy conditions, is always

desirable, and such a result is generally attainable, when *proper* remedies are used, and *improper* remedies are *not* used.

Abscesses have been treated by our profession in a routine manner, regardless of the extent of either hard or soft tissue involved, and I regret to say, with not very flattering results, if we are to judge by the society reports and by the list of inquiries on the subject of their successful treatment in the dental journals. Creosote or carbolic acid, are the two remedies universally recommended, and, I may properly add, universally used, for the cure of abscess in all stages and conditions, that is, whether of recent origin or when a chronic diseased condition exists, and I wish to state right here that in neither condition is either creosote or carbolic acid generally indicated, nor should either be generally used. In all cases of abscess where there is a discharge of pus through the process and gum, and where the sac can be reached through this channel, immediately fill the root of the tooth, thereby closing that channel, and leaving all disease outside the tooth. From this course I never deviate. Should a probe through the gum reveal rough edges of bone, the best way is to remove these edges with burs and chisels. This plan facilitates the more rapid return to normal conditions, and renders it, I believe, more sure than the use of any medicine, (which would tend to produce exfoliation of the dead bone,) and at the same time has a tendency to leave the soft tissue in a favorable condition for healing. In short, direct your operations toward the removal of the cause, and nature will generally effect a cure. I cannot illustrate my position on this subject more clearly, perhaps, than by calling your attention to three cases:

Case I. Mr. D., of lymphatic temperament, called with an abscess at apex of root of right superior lateral incisor. The tooth had been filled with gold on lingual surface by a neighboring dentist, and had remained comfortable a number of months. It was so loose that I could have removed it with my fingers, and very sore to the touch. I opened the ab-

cess freely, which operation soon relieved the patient of pain. I then removed the filling and opened into the nerve canal through the lingual surface of the tooth. Now, gentlemen, here is a case which, in the hands of the average practitioner, would have been dosed with creosote, both through the tooth and through the gum, although of a recent origin, and in a healthy patient, for, as I have already said, this is the usual way. I washed out the nerve canal with water, made a rope of soft gold foil, and immediately filled the nerve canal, nearly to the original position of the pulp proper, or that portion which occupied the center of the crown of the tooth, and dismissed my patient until the next morning, at which time I completed the filling and discharged the patient except with the request that he notify me if any trouble should occur. I saw him the fourth day after finishing the filling, and found the case perfectly cured, and cured by my not retarding the process by the use of creosote or carbolic acid. To have used either of these remedies would have prevented the case from healing so promptly. So much for a recent abscess.

Case II. Miss C., nervous temperament, called, having a right inferior first molar filled with amalgam, with the filling leaking, and a chronic discharge through the gum of six years standing. I removed the filling and found the roots had never been more than half filled, hence the abscess and chronic discharge. I removed all the debris from the roots, and, without further treatment, filled the roots with oxychloride of zinc, and the crown with gold, the operation lasting three hours, and dismissed the patient for a week, at which time I found the discharge much decreased, and in three weeks the cure was perfect. I saw the case within a month and found that no discharge had existed since dismissing the patient, three years ago. This case being connected with a lower molar, was one which is generally regarded as being most difficult to cure by any method of treatment. By removing thoroughly the cause it was cured without treatment.

Case III. This was a case of oral surgery. The cause of the disease was unknown to the patient. The discharge was through the cheek, on a line with the roots of the first left inferior molar. This abscess and discharge had existed four years, and had been treated with creosote and carbolic acid, and had been probed, and injected, and poulticed, but still the discharge remained. I mention these facts that you may know how much of the orthodox treatment an abscess will endure, and not be affected by it, except to grow worse, and also how much a patient will endure, and not be influenced, except to break a commandment with which I infer you are all familiar. This case was pronounced incurable. In treating it I operated by removing the soft parts diseased, until I came in contact with the external wall of the alveoli, which I found diseased. With chisels, and the use of large burs in my dental engine, I removed thoroughly all rough edges of bone, and readily determined when I had reached living bone, not only by the peculiar touch, but also by my patient again producing a compound fracture of the commandment already mentioned. I then carefully washed the parts with a very weak solution of chloride of zinc, brought the edges of soft tissue together, and held them there by two wire sutures, and covered the wound with adhesive plaster, as additional support to the sutures, and to exclude the air, the effect of which I have already mentioned. No other treatment was used, either local or general, and a perfect cure was secured. The operation was performed last January, ten months since, and the parts remain in perfect health, with scarcely any scar perceptible. Gentlemen, I am clearly of the opinion that had I used any of the remedies usually employed in such cases, I should not have secured such prompt and favorable results, and would have left a more perceptible scar, which would have been due to the protracted process of healing caused by my using any local treatment. Other cases might be mentioned, but these three are sufficient for my purpose, as they include both acute and chronic abscesses, in which both osseous and soft tissues were

involved. Now, gentlemen, I do not presume to say that these cases might not have been cured by the use of such local remedies as are indicated in the books, but I do presume to say that none of the three cases, herein described, could have been cured by any additional medication, as quickly as they were cured, nor as pleasantly for the patient, which considerations merit the attention of any one interested.

I wish to impress you with three points in treating abscesses: First, remove if possible the cause; second, do not medicate unless you are sure such a course is clearly indicated; third, when you are satisfied a medicament is necessary, be careful that you use the one indicated. For instance, take a case of simple abscess without necrosis. In such a case, creosote is admissible, and may be sometimes advantageously used, to a *limited extent*. (I doubt whether more than one case in ten, as presented to the dentist for treatment, will involve any necrosis.) In the case just cited, the antiseptic influence of creosote is indicated, if *any* medicament is. But in a case where necrosis *does* exist, the antiseptic influence would render creosote objectionable, because it would tend to *prevent* the process of exfoliation which must either take place, or the dead bone must be removed by instruments, before a permanent cure can be produced. If this is not accomplished, the re-establishment of the disease is liable to ensue at any time.

Dr. J. N. Farrar, of Brooklyn, has been making a series of experiments, testing the relative merits, of the various preparations of sulphuric acid and creosote. He sums up the following conclusions:

“First, that the chemical activity of an aqueous solution of sulphuric acid upon dead bone, and teeth, is far greater than that of an alcoholic solution.

“Second, that simple abscess unaccompanied by necrosis, which is by far the larger class, indicates the antiseptic treatment, as it will cure the abscess, and tend to preserve the dead root of the tooth involved.

"Third, that necrosis without teeth being involved, does not call for the antiseptic treatment, because it would tend to prevent decomposition of the necrosed bone; but does indicate an aqueous solution of sulphuric acid, which may or may not include certain other stimulants.

"Fourth, that necrosis, with teeth involved, does not call for either antiseptic agents, or the aqueous solution of sulphuric acid, as the former will tend to prevent decomposition of the dead ossific tissue, desired to be disposed of; and the latter, if it can be used in sufficient quantities to promote decomposition of bone, will also chemically act upon and injure the dead root of the tooth involved. Such cases indicate a solution like the aromatic sulphuric acid, for while it will stimulate the surrounding living tissue to a healthier condition, and permit, and perhaps, in a very trifling degree, hasten the natural process of decomposition of porous necrosed bone, it will not act upon the tooth sufficiently to injure it."

The classification of treatment just quoted, indicates the following classes of abscess: First, abscess unaccompanied with necrosis; second, necrosis without teeth involved; third, necrosis with teeth involved. Thus you see, gentlemen, that there are three distinct conditions, clearly indicating a different remedy for the cure of each. You will also readily observe, that to use creosote in the second or third class, would retard the desired results, and to use the aqueous solution of sulphuric acid in the third class would tend to produce decomposition of the root of the tooth, as well as to produce a removal of the dead bone, and that in this class, the aromatic solution of sulphuric acid is indicated, just where the aqueous solution of sulphuric acid and creosote are not indicated. In determining what remedy is indicated, in order to most successfully treat these cases, you will have to use your personal judgment. Experience will teach you to determine what medication is necessary, if you profit by it, and you are to be congratulated, if you are, at the same time taught what *not* to use. We have a sufficient

number of remedies to meet all these conditions, but what remedies to use, and where, and how, to use them, is the most difficult problem—especially for the young practitioner to solve. In forming a diagnosis, you will find that a knowledge of the mechanism of organs in health and disease, and of the physical laws to which that mechanism is subjected, is the best aid to the study of physical signs. And an accurate acquaintance with the structure and functions of healthy and diseased tissue, and with the vital laws which influence them, is the best guide to the comprehension of vital symptoms. These symptoms often obscure, but a determination upon your part to excel as diagnosticians, will surely win for you the ability to overcome all difficulties in this direction. All classes of indications ought to be carefully taken into account, in forming a diagnosis, and the more fully the physical and vital properties which constitute them are understood, the more available will signs and symptoms be in leading to correct conclusions, both in diagnosis and treatment.

Gentlemen, I have endeavored, so far as I have been able to discuss this subject in a single essay, to at least give you a start in the investigation of the subject of inflammation, abscess and necrosis, and the treatment indicated, or perhaps I should say, the treatment not indicated. For I think it is a fact that young practitioners are liable to overtreat, if I may use the term, in their anxiety to relieve their patients. Although this anxiety is commendable, it is perhaps well to be advised of this tendency, before committing the error, and so avoid that which those who have preceded you, have only learned to avoid by experience. Which experience may have been a good thing for the dentist, but not so profitable to the patient.

In conclusion, gentlemen, I desire to remind you, that your opportunities for acquiring a thorough knowledge of your profession, have never been so good as they are now, and an appreciation of this fact will enable you to become honorable members of a profession, which has advanced

more rapidly than any other ever has done, and by your aid, will, I trust, continue to advance in the future, as it has in the past.—*Dental Register*.

ARTICLE II.

Treatment of Deciduous Teeth.

BY W. E. ROYCE, D. D. S.

Read before the Seventh and Eighth District Dental Societies of New York, October 30th, 1878.

The first imperative rule for the preservation of the teeth is absolute cleanliness. This rule cannot be put into force too soon.

We have only to glance at the "children of nature" who inhabit our Western prairies, to see that man is not by nature neat. Slovenliness, like sin, is a part of man's birth-right; but by proper education he may be taught to abhor both. The child who cries at the use of the hair-brush will, probably, also object to the use of the tooth-brush, but, with proper training, he will soon learn that they are both not only endurable, but actually necessary to his comfort.

Long before the teeth make their appearance, the nurse should daily wash the mouth of her charge—taking a soft linen napkin, wrapping it around her finger, and after wetting it in lukewarm water, thoroughly rub the mouth, and especially the gums. Great care must be taken not to lacerate or chafe the delicate mucous membrane. If the mouth is carefully watched, the nurse will have timely warning of the coming tooth. Generally this is of small moment. The little pearl pushes its way up till it pricks the gum, and stands there so pure and white that we wonder how a fond mother can ever allow it to be neglected.

Few people realize what a child may suffer while teething. At this time the apical foramen is large and imperfectly formed, the tooth structure is soft, while the nerve that enters the tooth is large and sensitive. In this condi-

tion the tooth, by its gradual growth, begins to crowd against the gum, but, being unable to pierce it, is pushed back into its socket, and the child not only suffers inconvenience from the irritation of the gum, but in many cases untold agony, on account of the nerve being pressed between the tooth and the alveolar process. At this stage, one stroke of the lancet is sufficient to almost instantly relieve the little sufferer from his torture. The lancet should not be used in any case until a thorough examination has been made and its use is found clearly indicated. This can be determined in part by the age of the child; but more definitely by the condition of the gum at the point where the tooth is supposed to be. The gum will be found more or less swollen and congested, and the mucous membrane will have a tense or glistening appearance.

When the deciduous teeth have been erupted, they are almost universally neglected. If the careful operator suggests that such teeth demand attention, he is stared at in surprise, told that it is only a "baby tooth," and asked what possible difference it can make whether the teeth drop out, or are extracted a few months earlier. Here, again, we must teach our patients; make them realize that "baby teeth" are placed in the mouths of babies for an object; until that object is accomplished they are of as much importance as any other organ, and that when their work is done, nature will remove them.

Prominent among the evils attending premature extraction of the temporary teeth may be mentioned dyspepsia, contracted-arch, irregularity and consequent loss of the permanent teeth. We daily see children whose teeth have reached such a condition that mastication is an impossibility. In consequence of this, the food is passed to the stomach not only without mastication, but also without insalivation. The stomach, called upon to perform this excessive and unnatural work, soon gives out. The saliva becomes acid, and the permanent teeth, when erupted, bathed in this abnormal fluid, soon decay. May not the premature loss of

the deciduous teeth be regarded in *very many* cases as the primary cause of dyspepsia?

It is held by some that the alveolar arch is not absolutely contracted by the early loss of the temporary teeth, but, from want of use, it ceases to expand. Be this as it may, the result is the same. When the permanent teeth make their appearance, the arch is not large enough to receive them and they are consequently crowded from their proper position. The treatment of irregularity is discussed at length in our text-books, but the first rule is to remove, or—more properly in this case—avoid creating, the cause.

As the permanent teeth, lodged in their respective sacks, are gradually developed, and push their way out through the alveolar process, the roots of the temporary teeth are absorbed, until at last, when scarcely more than the crown remains, they drop out and give place to the permanent ones. The absorption of the root of the temporary tooth depends upon the life of the pulp, and ceases, if by any means that life is destroyed. In such a case, the permanent tooth, finding its proper course obstructed, seeks another, and is often erupted high up on the labial or palatine wall of the process. Or it may crowd directly upon the unabsorbed root, producing the most intense pain. Here extraction of the deciduous tooth is indicated. Alveolar abscess associated with a deciduous tooth should always be looked upon with concern, and unless it speedily responds to medication, should be regarded a sufficient cause for the extraction of the offending tooth.

Remembering the importance of not only preserving the deciduous teeth, but also of preserving them alive, let us examine their structure.

We find the enamel *thin*—affording but a slight protection to the tooth. The texture of the dentine is less than that found in the permanent teeth, while the pulp cavity is much larger in proportion to the size of the tooth; all indicating their quick destruction if attacked by caries.

It has long been conceded that the proper treatment for

caries is to remove the decomposed tooth structure and fill the cavity. Here our *definite* instruction suddenly stops. One tells us *never* to use anything as a filling material but gold. Another says use nothing but plastic fillings. This discussion has continued for years and will continue for years to come. It would appear, however, that the discussion must be confined to the filling of permanent teeth, as there can be no question in regard to which is preferable in temporary teeth.

In a very great majority of cases, gold is the best material for filling permanent teeth, but it is hard to conceive of an instance where its use would be admissible in filling deciduous teeth. If the patient is very young, he has not the strength to endure the protracted operation of filling with gold. In fact, it is doubtful whether any child can be subjected to the fatigue attending such an operation, without injury.

As the strength of the child increases, the strength of the tooth decreases. So at the age of eight or ten, even if the strength of the child is sufficient for the operation, the root of the tooth is so far absorbed that to apply the force necessary to condense a gold filling would be almost certain to loosen the tooth.

One of the chief qualities to recommend gold is its durability: a quality almost superfluous in a material for filling temporary teeth. Tin is not as objectionable as gold, as it is softer and more easily worked. Still, the force required to condense it is greater than can, with safety, be applied to a temporary tooth.

Plastic materials, although easy to insert, are often objectionable on account of the nature of their ingredients.

As the root of the tooth is absorbed the pulp also disappears, and the tooth is compelled, to a great extent, to depend upon the surrounding soft parts for nutrition. Or, in other words, nutrition is accomplished by an endosmotic and exosmotic action. With this fact in mind, and remembering the lack of density found in the deciduous dentine,

it can be seen how readily any injurious substance, placed in such a tooth, would be conducted to the general system. Amalgam, on account of its mercury would be objectionable in a tooth where the root was absorbed to any extent. It may be used, however, where a very hard filling is demanded—as upon the grinding surface of a molar—and the patient is so young that absorption has but slightly progressed.

Oxy-chloride of zinc possesses few qualities to recommend it in these cases, and should be avoided in partially absorbed teeth. Gutta-percha is undoubtedly the best material in all cases where hardness is not required; as on approximate, buccal, and palatine surfaces. Hill's Stopping, composed of gutta-percha, quick-lime, quartz and felspar, substances which cannot injure the system if absorbed, may be used where a harder material is required.

It is true that Hill's Stopping is not a permanent filling, but the teeth of which we are speaking have but a very short time to remain in the mouth, and even if the filling has to be replaced a few times, it is much better than to endanger the health of the patient.

That which has been said in regard to absorption into the system of materials used in filling, applies with still more force in regard to materials used in treating temporary teeth. As an example, arsenious acid should never be used in the deciduous teeth. If the pulp is exposed to such an extent that it is necessary to destroy its vitality (the importance of avoiding such a condition we have already seen,) the devitalization may be accomplished without danger either to the system or surrounding parts, by the use of a crystal of carbolic acid.

As a rule, mouth-washes and dentifrices should be avoided. In the mouths of some children, however, in spite of a thorough use of the tooth-brush, there is deposited upon the labial surface of the oral teeth a dark brown or green stain, which is supposed to be a deposit from the mucous. When this secretion is in a more acid condition than is normal, here a dentifrice of finely levigated chalk, together

with a mouth-wash of lime water, will be found advantageous, both in removing the stain by friction and in restoring the fluids of the mouth to a normal condition by their alkaline properties.

Chalk and lime-water are also recommended where there is a surplus of organic matter in the teeth. The chalk is placed in contact with the teeth, upon retiring, and allowed to remain through the night. Lime-water is used as a mouth-wash. The theory is, that a part of the lime and chalk is absorbed directly into the teeth. It seems more probable, that the substances being placed in the mouth, pass along the alimentary canal, are taken up by the absorbents, and eventually reach the teeth by means of the general circulation.

The result would be the same in either action, namely, to harden these teeth so that they may perform perfectly their work, which, although short, is of the greatest importance.—*Dental Advertiser*.

ARTICLE III.

American Academy of Dental Science.

The Eleventh Annual Meeting of the American Academy of Dental Science was held in Boston, on Wednesday, October 30th, 1878, at the Hotel Brunswick. There was a very good attendance including many eminent members of the profession.

The meeting was called to order at half-past ten o'clock, by the President, Dr. E. G. Tucker, who delivered a brief address of welcome, after which came the regular order of business.

Drs. G. L. Parmelee, of Hartford, Conn., J. Adams Bishop, of New York, and L. Tracy Sheffield, of Paris, were elected members. Dr. Joseph E. Fisk, of Salem, Mass., was elected an honorary member.

The following gentlemen have been elected to membership during the year : Drs. G. H. Ames and F. G. Eddy of

Providence, R. I., F. H. Rehwinkel, of Chillicothe, Ohio, and C. A. Marvin, of Brooklyn, N. Y. Dr. Elbridge Bacon, of Portland, Maine, was elected to honorary membership.

Officers elected for the ensuing year :

President.—Dr. E. G. Tucker.

Vice President.—Dr. J. L. Williams.

Recording Secretary.—Dr. E. P. Bradbury.

Corresponding Secretary.—Dr. E. N. Harris.

Treasurer.—Dr. L. D. Shepard.

Librarian.—Dr. J. T. Codman.

Board of Censors.—Drs. T. H. Chandler, W. W. Codman and D. M. Parker.

A communication was received from the Massachusetts Dental Society, inviting the Academy to meet with the other Dental Societies of New England, in joint convention, to be held in the city of Boston, in June, 1879. The invitation was accepted.

The following resolutions were presented and after discussion were adopted :

Resolved, That the use of public prints for advertising pretended professional merit, is derogatory to the dignity of the profession, and should be strongly discountenanced by its members.

Resolved, That among regular practitioners, any disparagement of the fellows to patients or the public, is a serious infraction of true ethics, tends to lower the profession in public estimation, and to debase the individual detractor, and should be condemned by all who have the best interests of the profession at heart.

The Academy having completed the routine business took a recess until 2 P. M.

At 2:30 P. M., Charles W. Eliot, L. L. D., President of Howard University, delivered the Annual Address before a large number of the profession, including many who were present by invitation of the Academy.

The following is but a brief synopsis of the address which will soon be published in full. It was of an informal nature,

delivered in a graceful and eloquent manner, and without notes.

President Eliot took for his theme, "The Defects Apparent in the American System of Dental Education." He said that the development of the dental profession in the seventy years of its existence in the United States had been remarkable; but as the development of a profession requires centuries, dentistry could not be expected to possess all the safeguards from injurious influences which have been attained by older professions.

The progress of dental science in this country not only has been extraordinary rapid, but on the whole satisfactory, and the causes of this, the orator said, were the American inventive genius, the hospitality of the American mind to novelties, and the soft unphosphatic diet of which Americans are fond. Besides this, every cultured American visited a dentist twice a year, while an Englishman only went when his tooth pained him; the former sought relief for future time, the latter for the present.

Mr. Eliot then took up the question, Is there real ground for the anxiety which exists for the improvement of the status of the profession, and especially dental education?

From the great increase in the number of dentists, and of patients, the increase in periodical literature and standard works, and the increase in the organized means of education, he thought there was real ground for that anxiety which manifests itself at the present day in dental literature and discussions.

The improvement must be brought about in a great measure through the organized means for the education of the profession. Our dental schools demand no preliminary examination, while those of England require several university examinations, and this simple fact will in time determine the superiority of the profession in England.

He argued that besides the preliminary examination of candidates for admission, that the course of dental study should be three instead of two years long, and said a change

in this direction is essential to the establishment of the dental profession on an equality with other professions. There should be no admission of the substitute of five years of practice for any portion of the period of study. There should be a certificate of attendance upon what may be called "private instruction," deposited in advance, and the practitioner granting such certificate should be required to show that he has proper facilities for instruction.

The exclusion of ignorant men from the profession was next discussed, the orator arguing that the proposition to secure this by means of a public registry, as in other countries, is not practicable in America; the people, or their representatives in legislative halls, are not competent to decide questions of science or of the higher education. Educated public opinion and not legislation would in time reduce the evil. He commented unfavorably on the recent new departure of several reputable medical schools, which advertise to confer both the medical and dental degree for three years of study; and argued that as not more than three fifths of the studies of these two courses were in common, and that as a three years course was absolutely necessary to the medical degree, the two degrees could not be given in that period without lowering the standard of both. While he hardly expected at present that the large proportion of dental students would be educated in the thorough way of first obtaining the medical and then the dental diploma, he hoped that the efforts of the profession would be directed to the improvement and upraising of the dental schools.

He urged the profession to emulate the zeal of the medical profession in its research and scientific study, and also in their noble example of gratuitous practice. He advised the necessity of strict professional etiquette in dealing with patients of other practitioners, and spoke of the value of associated action of the profession in the common pursuit of common knowledge, and of the value of recorded experience and observation as a help to those coming after, and above

all be placed the three aids, research, teaching, and gratuitous labor, as establishing and ennobling the profession.

He closed with a complimentary allusion to the Academy and other Associations of dentists, for the good work they were doing in elevating the standard of the profession. The address was received with close attention, and at its close a vote of thanks to President Eliot, coupled with a request for permission to publish, was unanimously passed.

An essay by Dr. Henry S. Chase, of St. Louis, on "Filled Teeth as Galvanic Batteries," was read by Dr. G. T. Moffat, a letter having been received by him from Dr. Chase, stating that he was unable to be present. Dr. Chase, after announcing his belief in the theory of Dr. S. B. Palmer, of New York, that every tooth having a metallic filling was a galvanic battery, proceeded to recount several experiments made by himself which had convinced him of the truth of this theory. The conclusions arrived at were that dentos was positive to gold, gold and platinum, amalgam, tin, and lead. Each of these metals united to dentos formed a battery the power of which could be stated thus :

With gold and gold and platinum,	100.
" Amalgam,	66.
" Tin,	50.
" Lead,	30.

With Hill's stopping there is no action, and with oxy-chloride of zinc the tooth became negative and the filling positive. In conclusion he said that the perfect filling was yet to be discovered. It must not be negative to dentos, it must not be positive to dentos, and it must be plastic.

The essay elicited quite a lively discussion, after which the Academy adjourned, and the members with the invited guests partook of the Eleventh Anniversary Dinner at 5 o'clock P. M., at the Hotel Brunswick.

EDWARD N. HARRIS,
Corresponding Secretary,
No. 5 Park Street, Boston.

ARTICLE IV.

Dental Neuralgia.

BY G. V. BLACK, JACKSONVILLE.

Before proceeding to discuss that form of neuralgia which we designate as Dental Neuralgia, it will be well to briefly consider *neuralgia in general*.

Neuralgia is a term used to designate an affection characterized by pain, located in the trunks or branches of the sensory nerves, and unaccompanied by other symptoms. But little is known of its real nature. Post mortem examinations have usually revealed no organic lesion of the nerves involved; the changes, if any, not being of such a nature as to be demonstrable by our present means of examination. There can, however, be but little doubt that in the production of pain there is a molecular excitement, at least in the elements of the nerve itself, that differs essentially from that called into play by the conduction of impressions in the ordinary healthful way. The healthy conduction of impressions, of course, includes pain as well as tactile impressions.

The pain from a wound, or a simple inflammation of a sensitive part—as the tooth-pulp—is conducted to the sensorium in a perfectly healthy way by healthy nerves.

Some forms of neuralgia seem to consist of such a condition of the nerves, that the effort to convey sensation—perform their function—is painful, as the performance of the function of contraction is painful in an inflamed muscle. Other forms of the affection differ from this in that the nerves seem to convey normal sensation properly, and without excitation of pain. It is evident that the nerves are not only the seat of pain, but the seat of disease in many instances.

Neuralgia may be either primary or secondary, but is, perhaps, very generally secondary, and dependent upon some preceding or co-existent diseases or lesion, and, therefore, symptomatic. No division into primary and secondary can

be of any value, unless it can be shown that certain symptoms, or classes of symptoms, arise from definite causes, and thus afford a guide to treatment. It is probably best, with our present knowledge of the affection, to always consider it as dependent upon some pre-existent or co-existent malady. This malady or lesion may be of the most obscure character possible, and wholly escape our closest search; indeed, we may say that in a large proportion of cases no cause can be discovered.

The *Pain* in neuralgia is entirely peculiar to this affection, is essentially different in its character and course from that induced by other causes. We may have pain projected from the seat of an injury or inflammation, either in a centric or excentric direction, and yet not constitute neuralgia. We may often find pain projected along the arm, in case of whitlow. The entire arm may become painful; the elbow or the axilla may suffer from projected or sympathetic pain. These sympathetic pains occur from various causes, but are almost always accompanied by intense suffering at the seat of lesion. Certain affections of the teeth, as pericementitis are liable to cause them about the angle of the jaws, throat, &c. The lymphatics are usually involved, and the glands become swollen.

Neuralgic pain is essentially different from these projected pains and seems to have nothing in common with them. The pain is never steady, but presents well marked intermissions or remissions and exacerbations; it is paroxysmal, the paroxysms follow each other in rapid succession, or the intervals may be much extended, even to days, presenting the utmost irregularity. It is usually a sharp, piercing pain, shooting along the course of the nerve, often with lightning-like speed, but sometimes changing its locality slowly, or possibly remaining stationary for a short time in one spot, or skipping about from point to point. We have seen patients endeavoring to point out the immediate seat of pain, place the finger on the chin, under the eye, the angle of the jaw, the ear, the temple, &c., in rapid succession, and

declare that the pain ceased in the first locality and appeared in the second, and so on, only one point being painful at the same moment. Again, we have seen the course of the nerves accurately traced in following the pain, as it darted from point to point. Again, the pain may become at once intense along the course, or the portion of a course of a nerve trunk, and remain so for an indefinite time when it will remit or wholly intermit to be renewed after an indefinite time in exactly the same locality. The pain is usually described as sharp, lancinating, piercing, boring, tearing, burning, and the like. Very rarely do we hear patients complain of heavy, dull pain, except in the remission of the paroxysms.

The pain may be seated in the skin, and, therefore, superficial. In this case it is oftenest described as prickling, as though a thousand needles were pricking the flesh. Sometimes this is burning, as though each individual needle was red hot. The slightest causes are often sufficient to induce a paroxysm, as a breath of cold air, the hand passed over the part, or anything that may call upon the affected nerves to convey an impression—exercise their functions—which gives a striking resemblance to the pain induced by the contraction of an inflamed muscle. In other cases the paroxysms come and go without any apparent cause.

There is usually no special attendant constitutional symptom farther than general debility as a result of continued suffering. The disease may, however, and as a fact, is often developed in connection with other diseases, especially such as slowly impair the vital powers, scirrhus, etc.

In many cases, certain painful or tender spots make their appearance along the trunk of the nerve, or at the situation of the ganglia, which are found to be tender on pressure. These tender spots may or may not be the seat of pain. Our personal observation, however, is that they are found to be points from which the pain radiates in the beginning of paroxysms. They are often of diagnostic importance.

Local Anæsthesia is frequent result of neuralgia; the

nerves seeming to lose, temporarily, the power of conducting impressions. This is perhaps noticed oftenest when the pain affects the surface. In several instances we have seen these anæsthetic spots well marked about the face. We examined a case, recently, in which sensation was entirely lost in the region supplied by the nerves escaping from the mental foramen. Pulps of teeth which cause neuralgia are often found in a state of anæsthesia.

Etiology.—The causes of neuralgia may be divided into Predisposing and Exciting. Those who may be predisposed to the affection may have it developed by a very trifling exciting cause, while those who are not so predisposed, such causes may fail entirely to develop the affection.

Predisposing Causes.—The Neuropathic predisposition, which has been minutely studied and established in late years, plays a very important part in the causation of many nervous diseases. By this phrase, says Dr. Erb: "is understood a pathological constitution affecting the functional constitution of the nervous system, by virtue of which, those who are thus constituted manifest throughout life the most varied pathological symptoms in regard to sensory, motor and physical processes. No one has yet been able to show in what this peculiar anomaly consists, and while some console themselves with the hypothesis of delicate trophic disturbances, or modifications of molecular arrangement, without thereby getting any nearer the facts, we must rest satisfied that such constitutional Neuropathies really exist, and that they play an important part in the production of neuralgia. They may be congenital, or acquired in consequence of various adverse influences. Many forms of neuralgia owe their origin to transmission from parent to offspring, which seems also true of many other nervous diseases, chorea, hysteria, paralysis, etc."

Certain periods of life also have an influence in predisposing to neuralgia. It does not occur often in childhood, it seems to increase with increasing age. The sexual periods, as puberty, the menopause, etc., seem also to exert an influ-

ence on the nervous system favorable to the development of the affection. Disturbances of nutrition also predispose to it. There is, perhaps, no more fruitful cause than anæmia, under the influence of which many distressing cases are developed.

All influences which tend slowly to depress the vital powers, such as over-work, too little sleep, close application to study, to the needle in sewing women, confinement in illy ventilated rooms, etc., favor the development of the affection.

Exciting Causes.—The most prominent exciting causes of neuralgia are wounds, mechanical irritants, punctures, contusions, etc. The severest forms of neuralgia have occurred from these when they have affected only a small branch of a sensory nerve. Irritants applied to a nerve, as a bit of glass, a brier, an exposed tooth-pulp, etc., have been demonstrated to have been the exciting cause of wide-spread neuralgia, not confined to the injured nerve, or its trunk, but radiating to many others besides.

Many cases of neuralgia are also supposed to be due to some changes in the bony orifices through which they pass from their origin to their distribution—to little ossific nodules or exostosis impinging upon the nerve trunks.

Malaria is also a very frequent cause of the affection, giving rise to many very severe forms of the disease. It may act as a predisposing cause in connection with mechanical irritants, or as an exciting cause in connection with other predisposing causes. Very many exciting causes might be noted, but space forbids. Enough has been mentioned to illustrate tendencies from which judgments may be formed in special instances.

[TO BE CONTINUED.]

ARTICLE V.

The Alcohol Question in England.

Within a comparatively recent time serious attempts at temperance reform have been begun in England. Many prominent persons have interested themselves in the agitation, which has shown itself in the organization of coffee-house companies, in the securing of pledges, and in demands for new legislation. The idea of drinking only water is a novel one to the English mind, but the energetic efforts of the reformers have at length brought it into prominence. There has recently appeared in the *Contemporary Review* a kind of "symposium" on the alcoholic question, the contributors being seven English physicians, most of whose names are familiar. Some idea of what their opinions are may not be uninteresting.

Sir James Paget takes the ground that the moderate habitual use of alcohol is "certainly pleasant and probably useful." In regard to moderate drinking, he says that the balance of medical and of popular feeling favors it, and that neither statistics nor physiological or pathological researches have proved it injurious. Nations who use alcohol largely, compare well with those who do not use it, and they do not appear to have inherited evils from their many generations of drinking ancestors.

Dr. T. Lauder Brunton takes up the more practical side of the question, discussing how and when alcohol is useful. There is, he says, a small class to whom alcohol is a poison; the smallest amount sets them wild. There is a second class whom alcohol exhilarates and quickens for the time; such persons indulge in it at great risk. The great majority of persons under middle age do not need it, and as a rule, are better without it. In persons who are in the decline of life, however, and in the debilitated, alcohol is a powerful and beneficial remedy. Alcohol is given as a food and as a stimulant. It is a food, but is one which interferes with the

oxydation of other foods in the body while it is being itself decomposed, and as a food it is only adapted to febrile conditions. As a stimulant it acts directly upon the heart, and reflexly upon the stomach, stimulating the circulation of the brain. After the first stimulus to the nervous system, the succeeding effect of alcohol is one of progressive paralysis. The higher centres suffer first, notably the judgment, and finally all succumb. Alcohol as a stimulant is useful occasionally to tide over a severe crisis, but its best effect is in rousing the system at the close of exhausting work.

Dr. Albert J. Bernays believes in the moderate use of alcohol also. He dwells more especially on the causes and extenuating circumstances of intemperance. In regard to these, he says that the water furnished by London, to its lower classes at least, is extremely bad and undrinkable. Then the adulterations in beer make its effect worse. Sugar is put in, and this destroys its thirst-quenching property, and salt acts in the same way; these being the two important adulterations. The variations in the alcoholic strength of liquors increase intemperance. At present, gin may have all the way from fifty-four to eighty per cent. of alcohol in it. The atmosphere of public-houses is foul and overheated, and is injurious to the workingmen who sit there. Beer is the best form of alcoholic drink according to Dr. Bernays, and wine the next. The present intemperance cannot be corrected by teetotalism, but it can be alleviated by other methods.

Dr. Walter Moxon takes ground against total abstinence, but devotes most of his article to a psychological explanation of why a man becomes a sot. His analysis of the question is sufficiently profound and correct, but it only tells us in polysyllabic terms that the nervous, excitable temperaments are more susceptible to alcohol than the phlegmatic ones.

Dr. S. Wilkes asserts alcohol to be, to all intents and purposes, a narcotic and not a stimulant. It does not help those who are under special mental pressure, such as students

working for prizes. It makes those engaged in intellectual effort less clear-headed, and under its influence the English laborer does less work.

Sir Wm. Gull is more careful in his recommendations of alcohol. In disease and debility it is useful, and also in overwork; but in the latter instance other things will do just as well, and Gull himself, when exhausted, eats raisins instead of drinking wine. Good food will supply all the wants of the system up to middle life, and though a glass of beer may help a laborer along, a biscuit will do just as well. Intellectual work can be done better without the alcohol. Bitter tonics or Liebig's extract of meat may quiet the craving for liquor which many persons have at times.

Dr. C. Murchison states that a man in good health does not need alcohol, and is probably better without it. He may take liquor occasionally without harm, but its habitual use, even in moderation, is attended with risk and may even induce disease. In conditions of the system characterized by weakness of the circulation, the habitual daily use of alcohol is likely to be beneficial.

It will be seen that in general these views coincide with those of the profession at large. Alcohol in disease is a valuable remedy; in the decline of life it is a useful adjunct to the diet; in healthy persons who have been overworked, it helps recuperation; its habitual use is always attended with risk.

As regards total abstinence, we believe it to be unattainable, and, except for the young and healthy, undesirable. There is an appetite for alcohol which will be satisfied, and which neither temperance societies nor legislatures can destroy. It would be better, then, if the spasmodic efforts of these bodies to prevent the use of alcohol altogether were directed to seeing that it is used temperately. There is much to be done in the way of introducing good malt liquors and light wines, in establishing coffee-houses, and in introducing harmless substitutes for alcohol. It might be of help if physicians would impress the fact that alcohol is essen-

tially a narcotic, not a stimulant. And something might be accomplished by educating every one, not omitting the higher classes, to a deeper sense of the beastliness of inebriety.—*Medical Record*.

ARTICLE VI.

The Care of the Eyes.

All are anxious to do this, but few know how effectually to do so, and many never think of the matter till failing eyesight warns them that it is absolutely necessary. By the latter the following suggestions will be read with interest.

The sight in most persons begins to fail from forty to fifty years of age, as is evidenced by an instinctive preference of large print; a seat near the window for reading is selected; there is an effort to place the paper at a convenient distance from the eye, or to turn it so as to get a particular reflection of the light; next the finger begins to be placed under the line read, and there is a winking of the eye as if to clear it, or a looking away at some distant object to rest it; or the fingers are pressed over the closed lids in the direction of the nose, to remove the surplus tears caused by straining.

Favor the failing sight as much as possible. Looking into a bright fire, especially a coal fire, is very injurious to the eyes. Looking at molten iron will soon destroy the sight; reading in the twilight is injurious to the eyes, as they are obliged to make great exertion. Reading or sewing with a side light injures the eyes, as both eyes should be exposed to an equal degree of light. The reason is, the sympathy between the eyes is so great that if the pupil of one is dilated by being kept partially in the shade, the one that is most exposed cannot contract itself sufficiently for protection, and will ultimately be injured. Those who wish to preserve their sight should observe the following rules, and preserve their general health by correct habit:

1st. By sitting in such a position as will allow the light to fall obliquely over the shoulder upon the page or sewing.

2d. By not using the eyes for such purposes by any artificial light.

3d. By avoiding the special use of the eyes in the morning before breakfast.

4th. By resting them for half a minute or so, while reading or sewing, or looking at small objects; and by looking at things at a distance, or up to the sky; relief is immediately felt by so doing.

5th. Never pick any collected matter from the eyelashes or corners of the eyes with the finger nails; rather moisten it with the saliva and rub it away with the ball of the finger.

6th. Frequently pass the ball of the finger over the closed eyelids towards the nose; this carries off any excess of water into the nose itself by means of the little canal which leads into the nostril from each inner corner of the eye, this canal having a tendency to close up in consequence of the slight inflammation which attends weakness of eyes.

7th. Keep the feet always dry and warm, so as to draw any excess of blood from the other end of the body.

8th. Use eye-glasses at first carried in the vest-pocket attached to a guard, for they are instantly adjusted to the eye with very little trouble, whereas, if common spectacles are used, such a process is required to get them ready, that to save trouble, the eyes are often strained to answer a purpose.

9th. Wash the eyes abundantly every morning. If cold water is used, let it be flapped against the closed eyes with the fingers, not striking hard against the balls of the eyes.

10th. The moment the eyes feel tired, the very moment you are conscious of an effort to read or sew, lay aside the book or needle, and take a walk for an hour, or employ yourself in some active exercise not requiring the close use of the eyes.—*Monthly Magazine of Pharmacy.*

ARTICLE VII.

Epithelioma—Blepharoplasty.

Dr. Noyes, at a recent meeting of the New York Pathological Society, exhibited a small specimen of epithelial growth removed by operation from the eyelids, which was of interest in connection with the means used to fill up the gap which was left. The patient was a lady aged 50 years. Nineteen years ago she noticed a small growth on the inner border of the lower lid, near the punctum. This remained stationary for ten or twelve years, when it began to spread along the border of the lid and at the same time broke down in ulceration. Within the past year the disease extended itself over the lachrymal sac, involved the inner portion of the upper lid, and made in all a tumor the size of a hazelnut. Two-thirds of the lower and one-third of the upper lid were occupied by the disease as well as the adjoining side of the nose. The operation of removal was performed without difficulty, the tumor shelling out from the underlying tissues easily. The lachrymal sac was exposed, but was not opened. Actual cautery was employed along the inner portion of the wound. In order to fill up the deficiency of the growth occasioned by the extirpation, a vertical incision was first made in a line with the inner canthus and along the side of the nose to the reflection of the mucous membrane of the gum. From the outer canthus an incision was also extended horizontally across the malar bone to within a half inch of the ear. The flap thus created was dissected up and slid inward toward the nose, thus restoring the lower lid. A space was left on inner canthus and inner portion of upper lid. An attempt was made to fill up this space by transplanting a severed portion of skin from the arm, according to the method proposed by Mr. Wolf, of Glasgow. But sloughing of this piece occurred, owing, as Dr. Noyes thought, to the fact that actual cautery had been previously used in that portion of the bed of the wound. Union

occurred by first intention throughout the flap for the lower eyelid. A second attempt to fill up the vacancy of inner portion of upper lid was made shortly afterward. An incision from the upper limit of the gap was made horizontally across the root of the nose, and then at right angles downward. The flap thus created was turned upon itself edgewise and accurately adapted to the edges of the gap. Her recovery was complete and satisfactory. The tumor was examined by Drs. Bull and Satterthwaite, and found to be an epithelioma.—*Med. Record.*

ARTICLE VIII.

The "Uses" of Pain.

The question is often asked: "What is the use of pain? It is scarcely conceivable that the infliction has no object." There are obviously two aspects of this question; in one, science has an immediate interest; with the other, it has a secondary, but not unimportant, concern. The first is essentially physical. What useful purpose does pain subserve in the animal economy? The answer is thrust upon us by daily observation and experience. There are two sentinels posted, so to say, about the organism, to protect it alike from the assaults of enemies without and exacting friends within. The first of these guardians is the sense of *fatigue*. When this speaks there is need of rest for repair. If the monitor be unheeded, exhaustion may supervene, or, before that point of injury is reached, the second guardian will perhaps interpose for the vital protection—namely, *pain*. The sense of pain, however, is more directly significant of injury to structure, active or threatend, than an excessive strain on function, although in the case of the vital organs, pain occurs whenever the pressure is great. Speaking generally, it may be set down as an axiom that, whatever collateral uses pain may subserve, its chief and most obvious service to humanity is as a deterrent and warning sensation

to ward off danger. It is worthy of note, though sufficiently familiar to medical observers, that the absence of this subjective symptom in cases of severe injury is too often indicative of an injury beyond repair. The extinction of pain is not the highest, although it may be a generous impulse. If there were no guardian sensibility of this nature, it would be impossible to live long in the world without self-inflicting the most formidable injuries. That pain, in the second place, has an educational value, as regards the mind and temper, no one can doubt. Some forms of pain would seem to be chiefly intended for this purpose; but even in this view pain has a practical interest, because the higher development of the mind which controls the body, and of which the brain is the formative organ, is a process of physico-mental interest governed by natural laws of which science is perfectly competent to take cognizance.—*London Lancet.*

ARTICLE IX.

Baltimore College of Dental Surgery.

The Thirty-Ninth Annual Commencement of this College will be held in the Academy of Music, Baltimore, on the evening of March 6th, 1879. The Valedictory Address will be delivered by Rev. Alex. W. Weddell, D. D., of Richmond, Va. The Class Address will be delivered by Frank B. Perry, of Bridgewater, Va.

The Alumni and all friends of the Institution are cordially invited to attend. Stage and other tickets can be obtained of the Dean, and all attending will be cordially welcomed.

Alumni Meeting—Baltimore College of Dental Surgery.

The Annual Meeting of the Alumni Association will be held in the College Building, March 6th, 1879, commencing at 10 A. M. As the Annual Meeting for 1879 promises to be a very interesting one, all the Graduates of this College

Alumni Re-Union of Ohio Dental College. 469

are earnestly requested to be present. The present prosperous condition of this, the oldest of Dental Colleges, is a matter for congratulation to all its Alumni who are interested in dental education.

S. J. COCKERILLE, D. D. S.,
Pres. Alumni Association.

WM. B. WISE, D. D. S., THOS. H. DAVY, D. D. S.,
Corresponding Secretary. *Recording Secretary.*

Mississippi Valley Dental Association.

The Thirty-Fifth (35th) Annual Meeting of the Mississippi Valley Dental Association will take place in Cincinnati, O., in Dental College Hall, on the first Tuesday in March, 1879, at 10 o'clock, A. M.

President—Frank A. Hunter.

1st Vice President.—J. S. Cassidy.

2nd Vice President.—J. W. Jay.

Recording Secretary.—E. G. Betty.

Corresponding Secretary.—C. I. Keely.

Treasurer.—J. G. Cameron.

E. G. BETTY,
Secretary.

First Alumni Re-Union of Ohio Dental College.

At the close of the last session of the Ohio College of Dental Surgery, it was decided by those interested who were present, to hold a re-union of all the Alumni at the time of the next annual commencement, when it is proposed to have every class that has ever gone out from the Institution as fully represented as possible. The object of the re-union is to bring together the graduates of the college upon the Ter-centenary Anniversary, that they may revive acquaintance and pledge themselves anew to give her that support and aid which enhances the usefulness of educational institutions.

A general committee consisting of one member from each class was appointed, whose duty it shall be to interest their

respective classes in the meeting, and to furnish pithy biographical sketches of deceased members. They will also give the leading items of interest pertaining to the classes, present location, status, etc., of the members, the reports to be made in the order of graduation.

The executive committee appointed, will attend to all arrangements necessary for the success of the meeting and entertainment of those attending. It is earnestly desired that every one will respond to this call, and by his presence give assurance of continued interest in his time-honored Alma Mater.

PROGRAMME.—*Thursday, March 6th, 1879, 2 P. M.* Organization of meeting. Calling the roll. Miscellaneous business. Historical Address, Dr. Geo. Watt, Class 1854. Reading of reports from General Committees in the order of graduation. The evening to be devoted to an entertainment, sentiments, toasts, etc.

Effort is being made by the Faculty to extend and render attractive the Museum of the College. The co-operation of the Alumni is earnestly desired in this work.

Donations of Specimens and Models of Anomalous Cases are respectfully solicited. Send to H. A. Smith, Dean, 286 Race St., when suitable acknowledgement and thanks for the same will be made.

Executive Committee.—J. Taft, *Chairman*; J. S. Cassidy,
H. A. Smith. E. G. Betty, *Secretary*.

EDITORIAL, ETC.

The many friends whom Dr. E. Cutter made whilst in Washington and Baltimore last autumn, will be pleased to learn that he has been "winning golden opinions" in New York City lately, where he appeared before the New York Academy of Sciences,

and lectured to a crowded house. The news correspondent of the *Boston Congregationalist*, writes as follows of the Doctor :

"The New York Academy of Sciences, on Monday evening, gave themselves and invited friends one of the richest scientific treats lately enjoyed here. The academy is our highest scientific body, numbering among its members the most eminent scientists and microscopists in the city. On this occasion, however, they borrowed from Boston your Dr. Ephraim Cutter, with the famous Tolles' one seventy-fifth inch objective lens, on the history, construction and uses of which he read a paper, with sciopticon illustrations. This is the lens to the work of which Joseph Cook has given such prominence, in his statements of the facts of biology, and by means of which he has been enabled to make large advances upon the information given by the best European authorities, on the intimate structure of the tissues of the body. The audience, large for the academy, were deeply interested in Dr. Cutter's account of the instrument and the remarkable illustrations, showing the vast enlargement of the minute objects to the examination of which it has been applied. The white corpuscles of the blood, *e. g.*, scarcely 1-1800 of an inch in diameter, were shown upon the screen, magnified to the size of two feet. The power of the lens, without amplifier, is not far from 7,500, or 56,250,000 times! Remarks upon the paper followed, in which the work of the lens was criticised as somewhat lacking in accuracy of definition and not superseding, if it even surpassed in practical value, the work of lower powers; but on the whole the new instrument met with a very cordial appreciation. In particular, Dr. Elsberg, one of our highest authorities, expressed his great admiration of such a piece of work. A lens whose largest face is only one-sixty-fourth of an inch in diameter, consisting of several pieces, which require to be ground and adjusted to each other with the utmost possible accuracy, and with a working distance of only 1-250 of an inch, he deemed such a triumph of mechanical skill as the world does not often see. The Academy warmly applauded Dr. Elsberg's commendation, and passed a hearty vote of thanks to Dr. Cutter."

We add, that Dr. Cutter received a few days ago an invitation from the President, the Earl of Shaftesbury, and the Council of the Victoria Philosophical Society of England, to become a member of that distinguished body.

H.

BIBLIOGRAPHICAL.

Mechanical Dentistry. A Practical Treatise on the constitution of the various kinds of Artificial Dentures; comprising also useful formulæ, tables and receipts for gold plate, clasps, solders, etc. By Charles Hunter, Mechanical Dentist, London, Eng.—Publishers: Lindsay & Blakiston, Philadelphia, 1878.

While this work is perhaps the best, as it is the most recent treatise on Mechanical Dentistry originating from our English Colleagues, yet it is by no means so comprehensive and useful a text book as the part of Harris' Principles and Practice of Dentistry devoted to the same subject, and which was prepared by the late Prof. Philip H. Austen, who had few equals and no superiors in the demonstration and description of the manipulative methods of dental mechanism. This work of Mr. Hunter's consists of nineteen chapters devoted to Impressions and Plaster Models, Metal Models, Gold—Plate—Clasps—Wire, Soldering, Swaging Plates, Antagonizing Models, Mounting Teeth on Gold Plate, Vulcanite Work, Combination Work, Pivoting Teeth, Repairing Continuous Gum Work, Celluloid, Obturators and Artificial Palates, Manufacture of Vulcanite, and the Elastic Force of Steam, Metals used in Dentistry, Properties of Metals—Specific Gravity, Electro-Gilding, and Miscellanea, illustrated by 101 wood cuts.

Such subjects as relate to the preparation of the mouth preparatory to the insertion of artificial teeth, the selection and quality of materials employed in taking impressions, and the principles of the vacuum cavity, being essential to a treatise on Dental Mechanism, we are somewhat surprised that they do not appear in this work. It is also evident from other parts of this treatise, that our English Cousins are not quite up to the present status of the science as promulgated in this country; and while Mr. Hunter's may be regarded as an improvement on any similar treatise originating in Europe, yet it is by no means equal

to some of our American text books. Notwithstanding such criticisms as we have made, many items may be gathered from this treatise which will prove interesting and instructive. The appearance of the work is very creditable to its well known American publishers.

The Advantages and Accidents of Artificial Anæsthesia. By Laurence Turnbull, M. D.—Publishers: Lindsay & Blackiston, Philadelphia, 1878.

This is an interesting and comprehensive Manual of Anæsthetic Agents, treating of their relative risk, tests of purity, treatment of asphyxia, spasm of the glottis, syncope. Dr. Bonwill's method for diminishing sensibility by rapid respiration is also noticed, together with the methods of local anæsthesia proposed by Dr. Benj. W. Richardson and others, in the form of ether spray, obtunding mixtures, etc. The medico-legal relations of anæsthetics in regard to the important question whether chloroform can be administered for improper purposes, are duly considered, the general conclusion arrived at being that chloroform cannot be used successfully for felonious purposes, and that a person in the anæsthetic state is not a competent witness. A number of cases are related all going to prove the correctness of the views advanced.

The publication of this manual supplies a want which has existed for some time, and the author has succeeded in furnishing all the information which experience and study have up to this time brought forth.

The dental practitioner will find this manual an important and valuable addition to his professional literature.

Facial Neuralgia, and the Visceralgiæ, their Diagnosis and Treatment. By J. Martin Kershaw, M. D.

This is Part I of a series on "Diseases of the Brain and Nervous System," and is devoted to the clinical history and symptoms of neuralgia, varieties, origin, &c.

In a section devoted to "Neuralgia of the Fifth Pair," family taint and constitutional defects, especially in children and growing young people are noticed, as well as Malarial Neuralgia and Migraine. The opinion of Dr. Spalding "that a large propor-

tion of the cases of facial neuralgia located in the dental branches, are due to complete or approximate exposure of the dental pulp occasioned by decay" is cited, and a chronic form alluded to, having as a first cause dental decay, and which continues, in many instances, long after the cause is removed; and even extraction of the tooth does not afford relief in such cases. Constitutional remedies are recommended, especially Aconite and Gelseminum.

Cases from Tomes, Wedl, Anstie, Erh, and others are given as evidence that cervico-brachial neuralgia can be traced to disease of the teeth, and that the removal of such teeth has at once relieved the neuralgic affection. Several wood cuts illustrate Part I.

Virginia Medical Monthly.—

Attention has been called in a late number to this sterling magazine. The article in the October No., on the Etiology of Typhoid Fever, by Dr. Bramlette, of Va., and although iconoclastic, is replete with information, and will form valuable material for generalizing by some one. Would it not be as well if more work of this sort were done, more facts gathered, and fewer dogmatic conclusions made without the facts?

The paper by Dr. J. J. Caldwell, of Baltimore, in the same No. is a valuable review of the neuroses of the pneumogastric and sympathetic nerves, and of the vaso and sweat centres; with appropriate therapy. This paper has attracted the attention of many distinguished pathologists, and its author in it shows an intimate acquaintance not only with the literature of this subject but also with the treatment of lesions of these nerves.

Dr. Wm. Selden, of Norfolk, Va., contributes an article on opium poisoning relieved by immersion of the feet of the narcotized person in hot water. Would this treatment, we suggest, be of any service in anæsthetic accident?

This Journal, (*Va. Medical*.) is contributed to by writers from Massachusetts to Wisconsin, from California to Mississippi, from New York to Texas; sixty-seven contributors, representing twenty-one States and territories, make up the list of the first seven months of the fifth volume, and the journal is only that old! Edited by Dr. Landon B. Edwards, Richmond, Va.

H.

Elements of Dental Materia Medica and Therapeutics, with Pharmacopœia. By James Stocken, L. D. S., R. C. S., England. —Publishers: Lindsay & Blakiston, Philadelphia.

This is a second edition, which is improved by the addition of Tables relating to Weights and Measures, Symbols, Poisons and Notation, increasing the number of pages from 147 to 319. We also note the addition of such agents as black snake root, aloes, carbonate of ammonia, valerianate of ammonia, iodide of ammonia, amylene, amyl hydras, aqua-fortis, armenian bole, sulphate of heberia, calendula, calomel, cannabis indica, animal charcoal, bromine, chlorinated lime, citrate of iron and quinine, colchicum, cold as a remedial agent, corrosive sublimate, cuttle fish bone, digitalis, ether, preparations of iron, golden seal, heat as a remedial agent, preparations of mercury, hypophosphites, iodide of potassium, mechanical remedies, magnetism, pellitory, plaster of paris, acetate of lead, salicylic acid, stramonium, valerian, together with a much better arranged index. These additions add greatly to the value of the work, which is printed in a convenient form and with large type.

On the Treatment of Placenta Prævia. By Joseph T. Johnson, A. M., M. D., Professor of Obstetrics and Diseases of Women and Infants, Medical Dep't University of Georgetown; Fellow of the American Gynecological Society, etc.

This is a well written and interesting pamphlet on the above subject, read before the Medical Society of the District of Columbia. Premature induction of labor, and rupture of the amniotic sac, are points to which the author invites favorable consideration; and he, by quotations and references, shows great familiarity with the literature of this most grave subject.

H.

Treatise on Dental Caries, and Experimental and Therapeutic Investigations. By Dr. E. Magitot.

We simply announce the receipt of this most valuable and interesting original work, in this number of the JOURNAL, promising to give it in another place the attention it deserves. It would have been noticed before this, but for the illness of the writer.

H.

MONTHLY SUMMARY.

Imbedding of a Piece of Tooth in the Tongue, in a Case of Gun-shot Wound.—Dr. John H. Packard writes to the *Medical and Surgical Reporter*, as follows:

In the *British Medical Journal* for September 21st, 1878, there is mentioned the following case, reported by Bronstein. A Russian soldier was wounded in the mouth at Plevna, July 18th, 1877. Nine months subsequently he felt pain in the tongue, which was found to contain a foreign body. On extraction this body proved to be an incisor tooth, carried away by the ball.

On reading this, I was reminded of a somewhat similar case which came under my notice during the late civil war. Major S., of the Sixth Pennsylvania Cavalry, was riding across the field on the 7th of May, 1864, during the battle of the Wilderness, when a ball entered his mouth, through the right cheek, breaking away the bicuspid and anterior molar teeth of the upper jaw on that side, cutting a gash across the tongue, and shattering the left upper molar teeth, with their alveoli. Although stunned by the blow, Major S. was conscious of spitting out a mouthful of blood and pieces of teeth, among which the ball must have been, for it was never seen afterward, and the left cheek was not perforated. In four days he reached his home, when I attended him. He thinks it was on the thirtieth day that he called my attention to a swelling and soreness on the upper surface of the tongue, where, he said, there had twice before been, at intervals of two or three days, a slight discharge of pus. Upon careful pressure I felt fluctuation, and opened a little abscess. Passing a fine probe through the orifice, I felt a foreign substance, which was at once extracted, and proved to be a piece of one of the teeth. It need hardly be added that the cavity healed up soundly at once.

Sugar.—On an average, every man, woman and child in the United States consumes each year about 30 pounds of cane sugar, and nearly 2 gallons of molasses, besides maple sugar, honey and other sweets. 19 lbs. of pure cane sugar is actually made up of, and can be changed into 8 lbs. of charcoal and 11 lbs. of water! Pure white starch is made up of 8 lbs. of charcoal (carbon) and 10 lbs of water. Any boy can demonstrate this roughly

by putting a small quantity of sugar on a piece of thin iron over a hot lamp or coals, and hold over it a glass jar bottom up. The sugar will change to pure charcoal, while the water will rise up and condense on the inside of the jar, if it be kept cool, and he will get nothing from the sugar but coal and water. The chemist can easily take the 19 lbs. of sugar and change it into 8 lbs. of charcoal and 11 lbs. of pure water, though he has not yet learned how to put the coal and the elements of the water together to produce the sugar. That requires the action of the living plant. Our sugar comes mainly from the sugar cane grown in the Southern States (most from Louisiana,) and from the West India Islands. The canes are somewhat like corn-stalks, but larger, taller, with narrower leaves. The sap or juice of the cane is pressed out between iron rollers, then boiled down to syrup, which crystallizes into sugar grains in large vats. Most of the sugar used in Europe is from the juice of the sugar-beet. It is similar to our cane sugar. The raw sugar is refined chiefly in Northern cities, by dissolving it, straining it through cloth, and through burned bones, after which it is boiled down until thick enough to crystallize in grains.—*American Agriculturist*.

Anæsthetic for Children.—With a large experience in the use of chloroform as an anæsthetic, Prof. Demme arrives at the conclusion to prefer it over all others as an anæsthetic for children. He says, its action is quicker, and more reliable, and in no way more dangerous than that of the others. In 32 cases he produced anæsthesia with ether and among those cases there were eight in which dangerous symptoms occurred, which made it necessary to employ energetic means to revive the little patients. D. complains, especially of the long duration of the stage of excitement, and of the severe emesis which frequently took place during, or after the administration of ether. He also mentions many instances, in which bronchitis, and a few in which disturbances of the bowels followed the use of ether. Bichloride of methylene had been employed in twenty-eight cases; the children took it better than either chloroform or ether, none of the unpleasant complications of ether narcosis were observed, but profound anæsthesia, such as is frequently required, could not be produced by it. The chloride of æthyliden—highly recommended as a safe anæsthetic by Dr. Liebrich—was used in twenty cases; while under its influence, a child of eighteen months, had a sudden and severe attack of asphyxia, which made it necessary to resort to the use of artificial respiration.—*Paul H. Kretzschmar, —Hospital Gazette*.

Effect of Diet on Liquor Drinking.—Charles Napier, an English scientific man, has been testing the truth of Liebig's theory

that liquor drinking is compatible with animal food, but not with a farinaceous diet. The experiment was tried upon twenty-seven liquor drinking persons, with results substantiating the Liebig theory. Among the more striking instances of reform brought about by a change of diet was that of a gentleman of 60, who had been addicted to intemperate habits for thirty-five years, his outbursts averaging once a week. His constitution was so shattered that he had great difficulty in insuring his life. After an attack of delirium tremens, which nearly ended fatally, he was persuaded to enter upon a farinaceous diet, which, we are assured, cured him completely in seven months. He seems to have been very thin at the beginning of the experiment, but at the close of the period named had gained twenty-eight pounds, being then of about the normal weight for a person of his height. Among the articles of food which are specified by Napier as pre-eminent for antagonism to alcohol, are macaroni, haricot beans, dried peas and lentils, all of which should be well boiled and flavored with plenty of butter or olive oil. The various garden vegetables are said to be helpful, but a diet mainly composed of them would not resist the tendency to intemperance so effectually as one of macaroni and farinaceous food. From this point of view, high glutinous bread would be of great utility, but it should not be sour, such acidity being calculated to foster the habit of alcoholic drinking. A like remark may be applied to the use of salted food. If we inquire the cause of a vegetarian's alleged disinclination to alcoholic liquors, we find that the carbonaceous starch contained in the macaroni, beans or oleaginous aliment appears to render unnecessary, and therefore repulsive, carbon in an alcoholic form.—*N. Y. Graphic.*

Camphor as a Hypnotic.—Wittich has repeatedly administered camphor to relieve the insomnia which accompanies certain forms of mania, hysterical insanity, and hypochondria. He has found that, under such conditions, camphor acts much better than chloral, morphine, or bromide of potassium. He administers it by hypodermic injection. He dissolves it in olive oil, and the dose which he recommends is from one to one and one-quarter grain. Small doses are more certain to produce sleep than large doses. The sedative effect, as a rule, appears rapidly and the sleep produced lasts several hours. The injection is to be repeated when the restlessness reappears.—*Jour. de Med. de Bordeaux.*

Paper Teeth.—Paper teeth are a new invention in Germany, and a number of specimens were displayed at the late paper exhibition in Berlin. They are warranted fully as durable as any other teeth.

The Goodyear Dental Vulcanite Co. have gained their suit against Adolphe P. Preterre, of New York. The decision rendered by Judge Wallace seems to place the whole matter of making and repairing rubber and celluloid plates under the control of the Cummings patent. The following are the principal points in the decision:

To repair a dental plate made according to the Cummings patent, by the substitution of a new for an old portion, with teeth imbedded, is an infringement of the patent.

It is an infringement of the patent if the teeth be embedded in rubber according to its terms, although the remaining portion of the base plate be made entirely of gold.

Celluloid and rose pearl held to be the substantial equivalent of the hard rubber or vulcanite in all essentials necessary to the successful practice of the invention, and their use a violation of the rights under the Cummings patent.

The facts established by the evidence in relation to such equivalency being different from those appearing in *Goodyear Dental Company vs. Davis, et al.*, that case is not deemed to be in point, although it declared the non-equivalent character of celluloid.—*Dental Advertiser*.

Borax as an Antiseptic.—At a recent meeting of the Academy of Sciences of Lombardy, G. Polli reported the results of numerous experiments in which beer, meat, eggs, blood, and urine were treated with boracic acid and borax for thirty days during the summer time, and were found still to retain their freshness and to present no traces of fermentation having taken place in them. In experiments, on the other hand, without the addition of the salt, but in some cases with the addition of sulphate of soda, the fluids passed into a state of complete decomposition in the course of fifteen days. The energetic disinfecting power possessed by boracic acid and borax, and the facility with which these substances can be absorbed into the economy, led Polli to recommend their use in diseases in regard to the infectious nature of which no doubt exists, or in which septic conditions readily arise. He adduces several examples in which the febrile conditions of tuberculosis underwent diminution. No benefit was obtained by Professor Visconti from experiments made with these remedies in malaria, though other observers have arrived at a different conclusion. In chronic cystitis the muco-purulent discharge quickly diminished, and even altogether disappeared in the course of a few days, and rapid improvement occurred in cases of bad suppurating wounds when they were applied externally. The dose recommended by Polli is 75 grains of boracic acid and 150 grains of borax per diem.—*Druggists Circular*.

Neuralgic Toothache.—Dr. Darvaris recommends quinine powder as a local application for neuralgic toothache. The patient should dip a finger into fresh water and then into the quinine powder, and rub it forcibly on the gum in the neighborhood of the painful tooth. The application should be repeated two or three times in succession. The bitter taste of the medicine should be borne as long as possible. Dr. Darvaris tried this remedy first on himself, and then on numerous other persons, among them many who had tried other remedies in vain. It invariably produced a rapid alleviation of the pain.—*Allg. med. Cent. Zeit.*

Chloral as a Revulsive.—This is the subject of a paper in the *Bulletin de Therapeutique*, No. 94, by Dr. H. Peyraud. Made into a mass with gum tragacanth, spread on paper and applied to the skin, it will produce a blister without pain. Applied as a powder, on cotton, it causes a painful burning sensation. By the former method, a portion is absorbed and the patient falls asleep. Its action is not so uniform as cantharides, but as a mild vesicant, or an agreeable revulsive, the author quoted would commend such "chloral paper" to physicians, the more so as it will keep for months without losing its activity, if well prepared.—*Med. and Surg. Reporter.*

Cuprum Ammoniatum in the Treatment of Neuralgia.—M. Bourdon has for several years used with success the ammoniasulphate of copper in the treatment of neuralgias that prove rebellious to the ordinary methods of cure. M. Ferreol, of the *Hospital Lariboisiere*, has lately had recourse to the same drug in two cases of facial neuralgia, in which hypodermic injections of morphine and aconitine, arsenical preparations, the nitrate of aconitine, and tincture of gelseminum had proved utterly useless. He administered it in doses at first of $1\frac{1}{2}$ grains and then of $2\frac{1}{2}$ grains per diem. The relief obtained was so rapid that M. Ferreol felt himself constrained to publish his cases.—*Bulletin de Therapeutique.*

Convulsions Caused by a Hair.—A child under one year of age suffered for several weeks from convulsions, which varied in severity and were frequently repeated. It appeared to be healthy in all other respects. All the usual methods of treatment were employed without success. At last the mother noticed the end of a hair lodged between the two incisors of the child, and, on drawing on it, removed a hair nearly a yard in length, which had hung down into the throat of the little patient. After the removal of this foreign body, the convulsions ceased as if by enchantment.—*Druggists Circular.*

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ARTICLE I.

Dental Neuralgia.—Continued.

BY G. V. BLACK, JACKSONVILLE.

Course of the Affection.—How certain conditions predispose to neuralgia is unknown. It is equally unknown as to how exciting causes act to develop the affection. Yet inquiry as to the observed cause of observable phenomena will not be wholly unprofitable.

It is not common for the pain to be developed suddenly, as may be the case with pain from an injury. An uncertain period of time is required for its development, during which slight pains may be felt in the part about to be attacked, which gradually increase in severity. A period of preparation or development seems to be an essential feature of the affection. This is true, no matter what the exciting cause may be. A brier lodged in the flesh with its point in a nerve branch will produce a pain of a normal kind immediately upon its lodgment, but no sudden neuralgia. A neuralgia may be developed within a few days or a few

weeks from the continued presence of the brier point. This is something essentially different from the normal pain accruing immediately upon its lodgment or the inflammation its presence may have excited.

We have, therefore, a development of conditions in the sensory nerves themselves, that induces and is necessary to the production of the pain in question. As before remarked, we may call this by this name or that, without arriving at any better understanding of the subject. It seems certain, however, that some nerve change is induced that gives rise to abnormal nerve function, the essential feature of which is pain; we may, therefore, designate this as the neuralgic condition of the nerves. This condition may be developed in and effect only a single branch of a sensory nerve, or it may at once be developed in all the branches of a common nerve trunk, or in a given region, or simultaneously in a single branch, or two or more branches, and then pass successively to other branches of a common nerve trunk, and then, as if by radiation from nerve center eccentrically, make its appearance in other nerve trunks in the neighborhood, and occasionally in distant regions of the body. In many instances there would seem to be little room for doubt that the spread of the affection is by propagation of the neuralgic condition along the branches and trunks of the nerves in a direction from periphery to center, and the reverse. As a rule the affection does not present a continuous progression, but after making more or less advance, becomes stationary, frequently only extending to certain trunks and its branches, or the pain may be confined to the trunk or certain portions of the trunk of the nerve. In that case the pain does not appear superficially but darts along, or is stationary, in the course of the affected portion of the nerve, as is often the case in sciatica.

The duration of the affection is exceedingly indefinite. It may continue for a lifetime, in spite of the most skillful treatment, or it may disappear within a few days. Generally, if a direct exciting cause is found and removed, the

affection disappears in a very short time, if not immediately.

Dental Neuralgia.—Under the term *Dental Neuralgia*, we include those cases of neuralgia the direct exciting causes of which are to be found in affections of the teeth. There is no longer any doubt that neuralgia of the fifth pair frequently has its origin in diseased conditions of the teeth as the direct, exciting cause. It therefore only remains for us to point out those conditions under which this result is most likely to occur, and if possible to indicate those forms of the affection thus developed.

Of course any exciting cause of neuralgia is most liable to develop the affection in those constitutionally predisposed to it, or who have become temporarily so from any cause, as anæmia, miasma, over-work, etc. This being understood, we may proceed to discuss those conditions of the teeth tending to its development.

We should say in the beginning that neuralgia must not be confounded with those cases of toothache in which sympathetic pain is projected to more or less distance from the seat of lesion, thus causing confusion in the patient's mind as to the particular tooth which causes the trouble. These we regard as cases of confusion of the sensorium in referring the pain accurately to its proper location, so that pain in a lower molar is referred to an upper, or the reverse. Again, pain in a molar may be referred to several of the adjoining teeth, as if neighboring nerve filaments had come to the aid of, and had taken upon themselves a portion of the burden of their fellow who was struggling under a load too heavy to be borne. In these cases the pain, although it may radiate to different parts of the face, is referred to the teeth as the part subjected to injury, and does not, necessarily, involve a neuralgic affection of the nerves, and usually differs essentially in its character from that affection.

At the same time we must not forget that neuralgia from causes entirely occult referred to the distribution of the fifth pair, may be felt especially in the teeth, while these organs

may, in themselves, be in a perfectly healthy condition. The extraction of teeth, under such circumstances, would afford no relief, farther than temporary abatement of pain from the shock of the operation.

Miss T., a teacher, applied to me February, 1872, on account of neuralgia, of which she said the central point of pain was the right superior molar. In tracing the course of the radiation of the pain, she traced the second division of the fifth pair, and that only. The molar tooth, and a point below the orbit—deep seated—were the especial points of pain. We noticed that in pointing out the course and seat of pain, she avoided touching the face. On brushing our fingers lightly across the face, a paroxysm of pain at once occurred.

Here were two points that very clearly contra-indicated a dental origin of the affection: 1st, It had been in progress for six weeks, and only the second division of the fifth pair was involved. In every case of demonstrated dental neuralgia we have seen, the second and third divisions have been at once or very quickly involved. 2nd, The act of conduction of sensation from the surface induced a paroxysm, which we have never seen in dental neuralgia.

The tooth in question had a very large gold filling in the grinding and mesial surfaces, which he had placed there four years before, after removing the pulp. It showed no sign, whatever, of pericemental disease. The patient was evidently suffering from overwork and anæmia. We advised rest and a tonic course of treatment, both of which were practically disregarded. The patient was anxious to have the tooth out, which we refused, fully believing it would be of no benefit. The case grew rapidly worse, and extended over a considerable part of the body, becoming bilateral. She was forced to leave her duties, and resolved to have the tooth out. She applied to another operator and had it removed. The case continued to grow worse. After exhausting her physician, she was advised, as she afterwards expressed it to me, "to go to the mountains and

go wild in the woods," which she said she accomplished to the letter in a double sense; wild with pain and wild in the mountains. After two years of suffering, she slowly improved and was restored to her former health.

Dental Neuralgia we believe to arise from, and to be symptomatic of certain lesions of the dental pulp. So far as we have personally observed, it makes its appearance first in the fifth pair, and uniformly affects some portion of both the second and third divisions. From these it may extend to the first division, to the nerves of the neck and chest, and to the brachial plexus and upper arm. It seems never to appear superficially on the skin, but is always deep-seated, seemingly confined to the nerve trunks and principal branches—otherwise it does not differ especially from neuralgia of the fifth pair from other causes.

The affection is never developed directly from acute inflammation of the tooth-pulp. In this condition pain may be radiated to neighboring parts, the same as sympathetic pains may arise in the neighborhood of other inflammations. How much this may have to do with the final development of neuralgia in those predisposed to it, is uncertain. Our own observation is, that very few sharp, active inflammations of the tooth-pulp degenerate into neuralgia, yet we have seen examples where this seems to have been the case. In all such, the inflammation has first become chronic and the local pain mostly or entirely abated before the occurrence of prominent neuralgic symptoms. As a rule, hyperæsthesia of the pulp precedes the occurrence of the affection, and it has generally been noticed by the patient that a certain tooth has been sensitive to thermal changes sometime previous to the attack, and perhaps for a time after the development of the affection. This usually gives way, gradually, to an anæsthetic condition of the pulp. In very many cases we have examined, however, no such previous or accompanying hyperæsthesia could be discovered, the patient being positive that there had been no abnormal sensitiveness of the teeth. In such cases it is rare to find the

offending tooth in the front, or an exposed part of the mouth. A common situation in such instances in which to find the exciting cause is in a second molar or wisdom tooth, with a buccal decay about the margins of the gums, with a fungous growth of gum growing into and filling the cavity of decay, very effectually protecting the exposed pulp from external influences. From these circumstances, we are convinced that hyperæsthesia of the pulp is always a forerunner of neuralgia, but it is not necessarily great, and may often escape the notice of the patient, provided the cavity be occluded and in the posterior of the mouth. By far the larger portion of dental neuralgia arises from exposure of the pulp in protected situations, where it remains uninjured by foreign bodies, and vitiated secretions are retained in contact with it. It seems likely that this circumstance is in part necessary to the changes which must occur in the pulp as a step in the initiation of that nerve change which must begin at this point and proceed thence along the branches and trunks of the nerves, in order to the development of the affection. Such teeth are not usually sore to the touch, nor to rapping with an instrument. This may, in some instances, excite a paroxysm of neuralgia, but our observation induces us to believe this is rare. Therefore, we consider this test, so much relied on by physicians, and so often reported in medical writings, as wholly unreliable in proving or disproving the dental origin of the affection.

After a few days' existence of neuralgia, if such a pulp be touched with an instrument it will be found sensitive, perhaps abnormally so, and a paroxysm of pain will generally follow the experiment. But if the neuralgia has been in existence for several weeks and has been severe, the pulp may be found in a state of complete anæsthesia, yet a neuralgic paroxysm is likely to follow within a few minutes after a puncture. How long a pulp may remain in this condition and yet retain its vitality, is unknown, and is probably very indefinite. We have seen several cases in which it had existed three months, and one in which we

have reason to believe it had existed more than six months, during all of which time the paroxysm had been frequent and very severe. We will relate the case:

April 20th, 1871, Mrs. L. N., aged about thirty, married, applied for removal of second right superior bicuspid, which was very much decayed, being directed by her physician to have it out, on account of neuralgia. She gave the following history: About six months ago she had some difficulty with her teeth, and as the molars and first bicuspid on this side were badly decayed, she had them removed. The second bicuspid was also much decayed, but she intended to have it filled, but had neglected it. She had no more trouble with her teeth, but continued to have occasional paroxysms of neuralgia, in both upper and lower jaw, which increased in frequency and severity, and gradually extended to temple and brow, and to the orbit; and also had severe ear ache. Within about six weeks the pain extended down the side of the neck, and finally to the chest, afterwards to the upper arm. It had been so severe in this position that she could not use her arm well. She had no superficial pain at any time; no prickling or loss of sensation, in the skin. The patient was very pale; decidedly anæmic, and seemed in a very weak condition of body. Stated that her health had been good before, though she was not robust.

Examination of the bicuspid tooth showed a large decay in mesial surface, pulp dead, peridental membrane healthy. A decay was discovered in the cuspid, mesial surface, with opening into pulp, which seemed insensible, but bled on being touched with the excavator.

We proposed the removal of this pulp, to which patient objected, saying she had been sent to have the bicuspid removed. This we refused, and referred her back to her physician, with statement of the result of our examination. 21st. Patient returned. While opening the pulp chamber for removal of pulp, a very severe paroxysm of pain occurred throughout the affected parts. Arsenic was applied.

23d. Reported very severe suffering for several hours after application. 24th. Better, but objected to having pulp removed, feared another paroxysm. As there was no signs of soreness, it was deferred until next day. 25th. Removed pulp without exciting pain. No paroxysm had occurred for twenty-four hours. Patient rapidly recovered her usual health.

In another case: a woman aged about twenty-five, unmarried, a seamstress, before in apparent good health, came to me with neuralgia that had proved intractable for three months. The history of the case showed the affection to have made its appearance in the third division of the fifth pair, pain quickly involving the second, and more gradually spreading to other nerves, until the branches of the fifth, the side of the neck and chest were involved, but not the arm. There was in this case considerable mammary pain, which, however, had been the last locality in which pain had been developed.

The cause of the difficulty was found in a lower molar, the pulp of which I had capped with oxychloride of zinc and filled some weeks before the occurrence of the neuralgia. The pulp was at once removed by the broach. In itself it did not seem sensitive, but a severe paroxysm of neuralgia followed. Within a week the paroxysm disappeared, but the anæmic headache, a severe pain in the top of the head, persisted.

We saw the patient no more, but learned that malposition of the womb occurred during this anæmic state, and chronic metritis was developed, from which the patient made a tedious and imperfect recovery.

These cases will usually, if the neuralgic predisposition be not very decided, be relieved by the destruction of the irritated tooth-pulp, or removal of the tooth, without other treatment. Spontaneous death of the pulp is attended with a like result.

The cases we have recited have been the worst forms we have met with. Cases of such duration, we are persuaded,

are not very common, nor is there any necessity for their duration, if the cause be recognized. Most of the cases we have met with, have been of only short duration. That some of these would have been as bad as those related, if the cause had not been recognized, we have every reason to believe.

Pathological Condition of Pulp.—In these cases the condition of the pulp, as before remarked, is never that of active inflammation. In the cases where we have minutely examined the pulp we should explain it, first, as a destructive hyperæmia; there is an abnormal amount of blood without, as a rule, much hyperæsthesia, and second, what is of importance as showing the tendency of this diseased action, the dentinal fibrils have lost their sensibility, as shown by the entire absence of sensibility in cutting into the dentine. We have examined no well-marked case of neuralgia from the tooth-pulp where this was not the case. Third, there is often found a marked disposition to destructive ulceration of the pulp. The exposed surface in this case is usually covered with pus; this condition, as is the case with most others recited, may often be met with where there is no neuralgia. Fourth, minute abscesses or pockets of pus are frequently found within the substance of the pulp. We have frequently discharged a minute drop of pure pus from a pulp and in a few instances have repeated this several times at intervals of a few days. Fifth, the pulp may be a little reddened, a natural color, or even ashy in appearance, not giving much evidence of disease by ordinary examination. When we have been able to remove and make microscopical examination at once, the tissues have been literally packed with wandering cells or leucocytes. The number of these cells that may be present in the tissue without appearing distinctly as pus has greatly surprised me, and leads to the inference that this is essentially the condition of the pulp in all these cases of which the phases before described are modifications. How this may be we are not prepared to state, as this is a matter of

recent observation. In two instances we have been able for a few minutes to see distinctly the motions of these cells as they crept, amœba like, through the tissues. This is a matter of great interest to both the Pathologist and the Microscopist, and we hope others will make observations. It seems likely that there is a tissue condition in which it becomes crowded with wandering cells to the extent, perhaps, of considerable swelling, without or almost without, the other phenomena of inflammation.

Pericementum.—Our observation leads us to believe that neuralgia is never induced by pulpless teeth or pulpless roots. We are perfectly aware that many reports may be found in both dental and medical literature, that would seem averse to this opinion. But in closely scanning these reports we do not find that the conditions of such roots have been reported with such accuracy as would be necessary to establish that the neuralgia was a result of pericemental irritation.

Most of them are absolutely silent as to any definite examination that would determine whether or not a living pulp was present, and are, therefore, worthless so far as this point is concerned. We have never yet seen a case of neuralgia that could clearly be referred to, or was relieved by the removal of, pulpless roots or pulpless teeth. We have, however, met with a case that would doubtless have been so considered, if the examination had been less rigid. This was a first inferior molar—crown gone and an abscess at the anterior root discharging upon the gum. The broach revealed a living pulp in the posterior root, which bled freely, and the puncture of which was followed by a paroxysm of pain.

As to why peridental inflammation should fail to induce neuralgia, while such symptoms are induced by pulpal irritations, we have no theory to offer. This opinion rests entirely upon observed facts. This class of irritations begets another class of phenomena, which we may call projected sensations, or sympathetic pain in various regions, which

are always co-existent with pain at the seat of disease. They are usually accompanied by disturbances of the lymphatics, and the glands are often swollen and painful, which is rarely an accompaniment of pulpalgia or neuralgia.

Calcific Nodules.—What the influence of calcific nodules in the pulps may be in exciting neuralgia is difficult to determine. Our own observation would be against the production of neuralgia from this cause. But that the sharp corners thus formed may serve to perpetuate irritations aroused by other causes scarcely admits of a doubt.

Exostosis.—Exostosis of the roots of the teeth, or more properly, hypertrophy of the cementum, is undoubtedly an occasional cause of neuralgia of the fifth pair, but we are persuaded that it is of rare occurrence; we have never met with but one case that could clearly be referred to this cause. This we had under observation more or less closely for more than a year. The pain was felt mostly in the lower jaw, but the ear, a location deep-seated under the eye, and the malar prominence were often referred to as painful. Before the case came under our observation, most of the teeth on that side in the lower jaw had been removed in the vain attempt to cure the trouble, but without effect. We finally suspected a superior molar that had protruded from loss of its antagonist; upon removing it the roots were found largely exostosed—tooth otherwise healthy. Complete and permanent cessation of the neuralgia, within a week, which had been of five years' duration justifies the opinion that the exostosis was the cause.

Quite a number of reports of neuralgia from this cause are found in our literature. We know of no distinctive feature that can serve us in arriving at a diagnosis.

Alveolar Abscess.—Neuralgia from the burrowing of an alveolar abscess into the inferior dental foramen is an occasional occurrence. This is generally met with in the chronic form of abscess and, in the two cases coming under observation, the region supplied by the nerves escaping

from the mental foramen and the anterior teeth have been the seat of pain. In such cases the presence of a tumor or a fistulous opening on the face, or more generally beneath the maxilla, will point unerringly to the source of the mischief. One of our cases was rather interesting. Mr. Geo. A. applied to me with neuralgia of the chin and lip on the right side, which had recently appeared also in the anterior teeth. Patient stated that it had troubled him more or less for eight or nine years, but he was frequently free from it for several months at a time. The paroxysms were sometimes severe, but on the whole it would not be considered a severe case. Examination of the mouth revealed a row of perfect teeth upon the lower jaw of this side, except that the first molar was gone. The gums, at the point where it was removed, appeared healthy. A partially cicatrized fistula was found under the maxilla, about midway between the mental foramen and the angle. A probe started into this was carried forward and upward directly through the bone until it almost reached the gum where the tooth had been removed. The gums were dissected away and the bone cut into with a chisel—it was but a shell—disclosing a cavity in which was found a root of the missing molar, and some fragments of necrosed bone.

We should have stated that the missing molar had been removed eight years before for the cure of this fistula which, having failed, other means also failing, the condition had become to be considered by the patient as incurable.

Crowding of Teeth, and impacted teeth, may possibly cause neuralgia by causing compression of the dental nerves in their bony canals. We know of no means of recognizing a cause of this nature. Examinations of each individual case must be conducted by the judgment of the operator and the relations of the teeth studied. The probable position of impacted teeth made out as nearly as practicable, in order that their influence may be estimated. We are unable to give any estimate as to the frequency that these have been demonstrated to have been the cause of neuralgia.

The cases that have already found their way into our literature have generally been too indefinitely reported to serve as a basis for conclusions. We have never seen a case that we could clearly attribute to impacted teeth, and but few where crowding of the teeth seemed to act as a cause, and these were not very clearly made out.—*Transactions of Ill. Dental Society*

ARTICLE II.

Address before the Virginia State Dental Association.

BY DR. J. HALL MOORE, PRESIDENT.

Delivered December 10th, 1878.

Gentlemen of the Virginia State Dental Association.—

It is now nine years since the organization of our Association. Each year our meetings have been marked by increased interest and fuller attendance, so we may now congratulate each other that the Virginia State Dental Association is no longer a mere experiment but an accomplished fact; and it only remains with ourselves to make it a power, not only in the profession, but in the community and the State.

Our former meetings have attracted a large share of attention and interest from the people and press, notwithstanding they have been held at a season when the National and State Legislatures were in session, and the discussion of questions of grave public moment by those bodies was diverting the minds of the people from the consideration of minor matters. Already the question has been frequently asked, "when does your State Dental Society meet?"

I congratulate you that at a time like this, at the close of a year almost unprecedented for general depression of business, and the financial pressure which has borne so heavily upon all classes of the community, so many of you have found it in your power to leave your homes and business to assemble here in the Capital City of our beloved State, to consult together upon matters relating to our specialty.

I congratulate you, gentlemen, that so far as we are advised, no breach has been made in the ranks of our Association during the past year by the hand of death. While the King of terrors has been reaping a heavy harvest in some of our sister States, and many have fallen at the post of duty, and others have seen their homes desolated by the snatching away of their loved ones, we have been mercifully spared such a visitation.

With thankful hearts to the Giver of all good who has been thus merciful and kind to us, let us pause a moment and drop a tear of sorrow for those who have fallen, and lift a prayer for the stricken ones in their desolation.

The first great object of our meeting, is to communicate to each other what we have been able to glean from those sources of knowledge which each may have found open to him, and particularly those points which experience and thought have developed, and which as we love our profession and desire its advancement, we would not keep to ourselves, but desire that every brother practitioner should know and use for the public good.

The other great object before us, is to confer with regard to the best means of cultivating a spirit of good feeling and fraternity among the members of our profession; of best promoting its interests, and of elevating it to that place which it deserves and to which it is justly entitled. Whatever others may *think*, we *know* that our profession is a noble one. The great end and aim of every true practitioner of dentistry is the relief of human suffering. It is true, that like other men, we and our families have natural wants and necessities which must be supplied; therefore we are compelled to seek some remuneration for our services, and it is only right and just that we should do so; but the man who makes pecuniary profit and personal wealth the goal of his ambition, and is actuated in the practice of his profession by personal considerations only, is not fit for so high a calling as that of the dentist and should seek some other walk in life where there is less demand for self-sacrifice, and love for all humanity.

Next to the general practice of medicine, our mother profession, there is no calling which demands so much self-abnegation and so large a degree of time sympathy and kindly feeling. The true dentist should be literally full to overflowing with the "milk of human kindness."

He has constantly to deal with physical suffering in its acutest form. To relieve pain, he is often compelled to inflict, for the moment, a much greater degree of agony. To prevent and provide against future suffering, he is frequently obliged to inflict an amount of torture from which the stoutest heart turns with horror.

We have all of us seen strong men who had faced the cannon's mouth, and advanced to the deadly charge without the slightest thought of fear, blanch and turn cold at the sight of a nerve broach or a pair of forceps; and who feared a dentist's chair, more than the bursting shell or whizzing minie ball. By far the larger number of those who come under our hands for treatment, are the weak, nervous and timid, who demand and are entitled to our fullest sympathies and tenderest services. Many of them come to us worn down with pain and suffering, and in such condition as to appeal at once to all the sympathies of our nature.

To be successful in the highest sense, the dentist must be firm as well as gentle. He must have a strong hand, well trained to use its strength with the most delicate touch. He must have a kind, sympathizing heart; he must know just when to manifest his sympathy for his suffering patient, and when to steel himself into an appearance of indifference. He must be patient, industrious, untiring; charitable to the faults and frailties of humanity, not easily offended, urbane, cleanly and neat in person and surroundings, self-possessed, punctual, earnest and laborious. He should be ready when the work of the day is over to light the student's lamp and carefully peruse what other men have observed and written down for his instruction, or write out the result of his own observations and experience, that

others may profit thereby in the great work of mitigating human suffering.

The time was, when men who professed to practice dentistry kept secret from others their peculiar methods of operating, that they alone might derive profit and emolument therefrom. I have myself paid as high as a hundred dollars for three hours instruction in some new method, and there are several gentlemen now present who will bear witness that a large part of our dental education was obtained in that way. But I am happy to say that day has long since passed away, and that now all true minded dentists are ready to communicate whatever discoveries they may make for the benefit of the profession, as the well filled pages of nearly a dozen dental journals, published in the United States alone, will testify.

Our profession has made great and rapid strides in the last quarter of a century. Some of the gentlemen now before me can recollect when a dental college was not only unheard of, but undreamed of. We remember when the name dentist was rather one of reproach, regarded as almost synonymous with quack or humbug. The few honest, earnest men who practised dentistry from right and true motives had to bear the reproach and dishonor of being associated in the minds of the public with the rough barber tooth drawer, who cared only for the quarter or half dollar which he received from his victim, and who, in the majority of cases could not tell an incisor from a molar.

When a few far seeing, earnest men began to discern the public need for educated dentists, and proposed to found a college for the instruction and training of those who desired to become such, they were met with sneers and division. Notwithstanding the great, and what seemed to many insurmountable difficulties in the way, the Baltimore Dental College was opened, and at once found men of the right stamp ready to enter its halls, thankful that the opportunity was afforded them to prepare themselves properly for the discharge of the duties of their chosen profession.

Some of these men have been an honor not only to their calling, but to the country, and have aided greatly in the work of bringing our profession up to its present high state of dignity and usefulness. We are happy to know that some of them are still spared, and are in the harness, working to elevate their chosen profession to a still higher standard. Now, instead of our dental college, we have no less than ten, in the United States, and some of the principal medical schools have been glad to acknowledge dentistry as a specialty of medicine, and to appoint men qualified to teach it in their colleges. Not only in this country has the importance of dental education been recognized, but in several of the States of Europe Dental Colleges have been founded.

Within the past year the Government of Great Britain has awaked to the importance of proper training for the practice of dentistry, and by legal enactment made it a specialty of medicine. By act of Parliament those who shall hereafter engage in practising this specialty must have a regular medical education, and in addition thereto be able to pass a most rigid examination as to their qualifications as dentists. The English dentist of the future will be as well grounded in Anatomy, Physiology, Pathology, Chemistry, *Materia Medica* and Surgery as the general medical practitioner. The student who can pass the examination required by the "Dental Examining Board of the Royal College of Surgeons of England" for the degree of Dental Surgeon, will be well fitted to practise either medicine or dentistry, and will have no occasion to be ashamed of his choice of dentistry as a profession.

While much has been accomplished in the last few years, much remains to be done. As we all know too well, there are many men, even in this enlightened age, calling themselves dentists, who are in every respect unworthy of the name without the first qualification except impudence, if that may be called a qualification. They palm themselves off upon a too easily gulled community, by flaming adver-

tisements in which they do not hesitate to claim superiority over those who have labored earnestly and honestly to fit themselves for their work. By offering to work at prices little above common laborers wages, they deceive the public, unfortunately not yet sufficiently educated upon the subject to estimate rightly the value of dental operations; they sacrifice thousands of teeth annually and bring dishonor upon the fair name of an honorable profession. The deluded and swindled victims of these pretenders are not the only sufferers by this state of affairs.

People generally do not discriminate between the educated, honest man who tries to serve his patients well and faithfully, and to minister to the good of his fellow men, and the dishonest quack. Therefore the profession as such, is held responsible for all the injury done by the ignorant pretenders, much of the responsibility of this State of affairs lies at our door. We have not done our duty in the premises, and we are not doing what we ought now, in the way of enlightening the public mind as to the difference between the qualified dentist and the mere charlatan.

In many of our Dental Societies the lines have not been drawn rigidly enough. The desire to make a large show of numbers has led to great laxity in receiving members into these societies; and thus many men, wholly unworthy have been admitted into membership, and in many instances allowed to take prominent part in them, and use them for their own sinister ends.

Again, in the great desire to secure practice, some who know better, and who, as regards educational qualifications and manipulative skill, are worthy to take high rank, so far forget what is due to themselves, their professional brethren, and an honorable profession, as to resort to the dishonorable tricks of the quack and mountebank to bring themselves before the public eye for exclusively selfish purposes.

Some of our Dental Colleges too, in the race for popularity, and fearing to give offence to their patrons, graduate and send our young men to practise, whom they know to

be utterly unqualified and in every way unfitted by nature as well as by lack of proper education for the discharge of those functions which belong to the dentist. Thus the professional standard is lowered, and the profession itself brought into disrepute.

Gentlemen, these things ought not to be, and the remedy lies with us. The public mind is to be educated, and the honorable high minded dentist alone can do it.

We should teach those who come under our influence to discriminate between the quack, (even if he holds a college diplomacy,) and the honest man who loves his profession, and practices it for noble ends, and not merely to make money.

We should rigidly exclude from our fellowship *all* who resort to unworthy means of any kind to break down their fellow practitioners, or build themselves up. While we should be extremely careful to avoid everything which could possibly be used to the disadvantage of a time professional brother, and exercise the greatest charity towards the failings of those who are honest, by endeavoring to do right, we should not hesitate to denounce in unmeasured terms those whom we know to be mere pretenders.

We should be animated by a more kindly spirit towards each other. Jealousy and envy are wholly unworthy of men who are engaged in so honorable a work as we know ours to be.

We who are older should counsel our younger brethren, and do all that we can to encourage them, to pursue their calling in an honorable manner for honorable ends. We should endeavor to stimulate their ambition to excel in everything that relates to their profession and do all in their power to ennoble it. This we should do not only by precept but by example. If we have opportunity to see when a brother has failed in the endeavors to perform some operation which has been entrusted to him, we should go to him, show him how the failure was caused and how it might have been prevented so that he may be able to guard against the same error in the future.

Those whose lot it is to practise in the same community should cultivate a sentiment of friendship for each other, and avoid everything like professional jealousy. They should meet as often as possible and confer as to the best modes of practice, and do all in their power to advance each other's interest, giving their patients and the public to understand that they are friends, and not rivals, brothers in an honorable calling, and caring more for the honor of their profession than for personal aggrandizement.

If there be any rivalry let it be a generous one to excel in all that is ennobling, and in advancing the great end which should be nearest the heart of each; the relief of human suffering. There is no reason whatever why two or more men practising such a profession as ours, in the same town or city, should not be the best of friends, and it would be so if we were all actuated by right and pure motives.

I trust that the present session may be as pleasant and harmonious as those which have preceded it. That those who are with us for the first time will be encouraged to take hold and labor in the good cause, and that we will all determine that whatever may have been our course in time past, from this time onward we will do all in our power to elevate our profession, and avoid everything which can by any possibility bring it into reproach or dishonor.

ARTICLE III.

Is Dentistry a Specialty of Medicine?

BY C. STODDARD SMITH.

The common, in fact almost universal and generally accepted answer to the question contained in the caption is, that dentistry is a specialty of medicine. That such is the case has been assumed by colleges, which embody this idea in their announcements and curriculums; by societies which so state in their constitutions; and by writers, journalists, and practitioners generally.

In this paper we shall take issue with this view of the matter, and shall present such reasons as occur to us in support of the proposition that dentistry *is not*, or at least *ought not to be*, a specialty of medicine.

If dentistry *was* a specialty of medicine, it would follow that the medical text books and curriculums should embrace a more or less complete exposition of dental science; that a medically-educated man would *by virtue* of his medical education and knowledge, be at least measurably fitted to practice dentistry. Are these propositions true? Is either of them true? Let us see.

First, do the medical text books contain, and do the medical professors teach, anything which by any means could be considered an approach to correct dental teachings? It is notorious that they do not, as could be abundantly shown by extracts from standard medical works, which want of space will not permit us to make.

Incomplete, as applied to these teachings is not the word; *inaccurate* is better, but does not express the fact; ridiculous nonsense is nearer to it in many cases. These books show that the writers, eminent men in their profession, had not the slightest idea of the true cause of dental troubles, or their appropriate remedies. This is not to be wondered at. It is but a short time since they were, on strictly *medical* subjects, floundering in the depths of ignorance; treating diseases as "humors," blistering, purging and dosing in a wholly empirical manner; and,—the more's the pity,—they have not wholly gotten over it yet. But does this indicate that they are competent to teach dentists what they need to know in order to practice dentistry successfully? Do the teachings or the books in any degree fit the student for such a practice?

Then, second. Is a medically-educated man able, *by virtue* of his medical education, to practice dentistry properly? A moment's reflection will, I think, convince a thoughtful and observant mind that such is not the case. Every one of you *knows* it is not. You know, and I know, that if the

preservation of our own teeth, or those of our families, depended upon the treatment they could receive, not from the young medical graduate merely, with the odor of the hospital and dissecting-room still clinging to him, but from the educated and talented physician or surgeon, of large experience and great success, posted in all the literature of the profession, eminent in diagnosis, we should stand but an exceedingly slim chance of retaining any of them longer than Dame nature and the destructive influences of the mouth would allow them to remain. Imagine yourself for a moment, with a carious cavity in close proximity to the pulp, and dependent for treatment upon the village doctor, or even on the most skillful medicus you can call to mind. Do you think you would sit calmly and allow him to scrape and punch that tooth because he was a fine anatomist, or because he had eminent skill in the treatment of typhoid or scarlet fever? In all candor, would you not rather trust the village jeweler, (supposing him to be an intelligent man,) to whom in a half hour's talk and demonstration you could explain the location of the pulp, and the operation necessary? We had almost said would you not rather trust the village blacksmith, or the machinist from the shop? For our own part, we would not only sooner trust the jeweler, but if we wanted to make a successful and a skillful dentist, we would select the intelligent jeweler, or even machinist, in preference to the doctor, and there would be reason in the choice. The training in the one case would have been in the line of the daily requirements of the dentist; in the other it would have been in quite another direction. Medical education, be it ever so thorough does not in any degree qualify, it does not even *prepare* its possessor for dental practice; at least not nearly as much so as does the work of the jeweler, or mathematical instrument maker, who are accustomed to handling delicate instruments and to making fine adjustments. Even as regards the comparatively simple and measurably surgical operation of extracting teeth, do you know any, or at least many

general practitioners who perform it with any degree of skill? Do you not have any number of broken teeth coming from them as an evidence of their bungling when they attempt to perform what ordinarily is but a simple operation of what is claimed to be only a "specialty of medicine?" If we are to judge what they know of their profession by what they know or what they can do in what is claimed as a specialty of that profession, they are but a sorry set of men to be intrusted with the life and health of their fellow creatures. I have a better opinion of them than that. I believe their knowledge and ability on *this* subject, is not an index of their skill and success in their own department. They *do* know medicine, but they *don't* know dentistry; and the best of them know they do not. The more intelligent and enlightened they become as regards dentistry, the less they want to meddle with it or its operations, unless indeed they become dentists.

So much for the skill; now for the knowledge. I need but to refer to the oft-told tales of doctors who treat alveolar abscess for months supposing it to be erysipelas, who treat neuralgia as a constitutional disease, because the "teeth are all sound," or have fine "solid" fillings in them; who do not know that a wisdom-tooth may cause almost any trouble about the face; of the surgeons who gravely pronounce an old root covered with salivary calculus, to be an "osteosarcoma;" of the almost universal practice of the M. D.'s who prescribe acid medicaments in blissful ignorance or willful disregard of their effect upon the dental structures; of the doctor who assures the parent that the sixth-year molar is a milk tooth, and should be extracted. Every one of us has seen more or less of this sort of thing; every one of us knows that these accounts are usually accompanied by the statement that the thing was "done by one of our *best* physicians." These things show, not only that medical men, *as such*, have no *skill* in dentistry, but that they are woefully deficient in *knowledge* as well; in fact they are but little above the intelligent non-professional in either respect.

And further; do medical men necessarily or even usually make the most successful or skillful dentists? We will not say what has been said, *M. D.* stands for miserable dentist; but we will say that in our opinion, as a rule the *M. D.* members of the profession are not at least any better than the rest; and we do not believe they will average in ability as well as an equal number of equally intelligent non-medical men. Call to mind those of your acquaintance and see how they stand. Go abroad and see how the long, scholastic and medical European training makes fine operators, or rather see how it does *not* do it.

The main reason, as we understand it, for claiming that dentistry is a speciality of medicine, is that the teeth are a part of the human frame; that they and the adjacent parts are subject to disease; and that he who treats those diseases properly must understand the human frame, and the treatment of disease; *ergo* he is a physician. Indeed it has been broadly stated that if we are not medical specialists we are a set of carpenters. But let us see if this statement is really true—if this conclusion necessarily follows. Granted that the teeth are a part of the human organism, and subject to disease, which none deny. Granted that a knowledge of anatomy, of physiology, of therapeutics, is necessary to the proper treatment of dental lesions. Does it follow because the medical man must also study these—because both he and the dentist are obliged to get a part of their preliminary information from the same text books—because certain knowledge underlies both professions, that the one is a branch or specialty of the other? All knowledge is founded upon certain substructures which are common to all branches alike. What sort of an argument would it be to say that architecture was a branch or specialty of astronomy, because both the architect and the astronomer must understand mathematics, and must occasionally use the rule of three in working out their problems; because both make drawings upon paper to record the work of their brains? Shall we say that pharmacy is a specialty of medicine because both

require a knowledge of drugs and chemicals? Shall we say that the maker of artificial legs is a medical specialist, because he would need to understand the anatomy of the leg in order to construct his substitute, and because he has to deal with living tissue when applying it? The temple of science is not a collection of columns, each standing upon its own pedestal, and each crowned with its appropriate bust or sculpture. It is rather a magnificent edifice, whose foundation stones are planted upon the solid rock of truth, and are interlaced and interlocked; its lower stories are all communicating, and all subservient to the uses of the upper parts, from which rise the several spires, cupolas, turrets, minarets and towers devoted to the various branches of science and art, differing, it may be, in architecture, in height, in magnificence, but all alike parts of one harmonious and imposing whole.

It is true that the dentist and the physician must have much knowledge in common; but it is not therefore true that dentistry is a branch of medicine. Though there is much in common, there is more that is not so. What has the physician (as such) to do with metallurgy and plaster-of-paris, and sand and zinc, and tempering steel; with the cohesive properties of gold, the proper vulcanizing point of rubber, or the manipulation of celluloid? What does he know,—what in the nature of the case *can* he know, about the thousand delicate manipulations of the skillful dentist? His time and brain are full of symptoms and doses; if he knew ever so much dentistry he would not be able to use his knowledge. What has the dentist (as such) to do with obstetrics, with ophthalmology, with cardiac disease, with lung or liver disease, with cerebral disease, with venereal disease? Why should he waste his time, and that to no purpose, in studying these diseases, their symptoms and their treatment? We say waste his time, not because such knowledge is not desirable, and might not be valuable; so might a knowledge of chemistry, or of many other things; but who expects a dentist to be a thorough chemist, and

how is it possible for him to be one? Chemistry is not a by-play, a thing to be mastered in odd moments; it is a life-study, and enough so to engage the ablest minds. We say waste his time, because all the knowledge that he might obtain from books on these subjects, or even from a hospital experience, should he have it, would be utterly useless to him in his life work; not because he might not have occasion to use it, but because when wanted he could not depend on it. Such knowledge, to be of any practical use, demands not only preliminary study and clinical experience, but constant and ceaseless observation and practice, in order to render it of any reliable service, which, by the nature of the case, is out of the question. Which of you, if you filled a tooth but once a year or once in five years, could do justice to the work? What graduate (unless he be possessed of an exceptional memory,) can tell three years after commencement the names of the muscles, or the bones, or the origin and function of the nervous trunks? Who of you would trust the life of a dear one in a crisis, with a man who, though he might *know* the symptoms of the fever, was not practically familiar with the thing itself?

We say waste his time, not because there is not much in these things that is desirable and proper for a dentist to know, but because it is utterly impossible that he should know all or even any considerable portion of what is just as desirable and proper to be known. Dentistry itself is a life-work, a life-study; it takes a whole man to be a dentist, and it should occupy the whole attention. For a man to undertake to thoroughly master all that is collateral to it, would be like the attempt of the landshark to buy all the land that joined him. He would soon find himself upon a limitless expanse. The thing is impossible; it cannot be done. To attempt it would be to frustrate the objects aimed at, for no time or strength would be left for the thing itself. And when it comes to choosing, as it certainly must come, it is the part of wisdom to choose that which will best fit one for the practical realities of one's chosen pursuit. In ordinary

education this is being more and more realized ; it is recognized that the study of the classics and other branches, do not tend to fit men,—indeed it is sometimes claimed that they *unfit* them—for the practical business of life ; and consequently, technical and polytechnic and other practical courses of study are more popular than classical. The ideal dentist may be fully educated in chemistry, in metallurgy, in physiology, in therapeutics, in anatomy, and all kindred and cognate sciences ; but that ideal dentist will never exist while flesh and blood and human capacity remain as they now are, simply because his existence would involve physical impossibilities.

Let us not be misunderstood. We go for the broadest, the highest, the deepest culture possible, in all departments of human activity. But life is short and art is long. It is given to but few men to become possessed of eminent or even of tolerable knowledge in more than one department ; it is, in fact, given to but few to become really eminent in even one department. The great mass must rest content if they attain sufficient knowledge to enable them to become efficient workers in any single department of the world's great work-shop. But let every man *first* possess himself of just as much preliminary education as his position, means, and ambition will enable him to get ; then, having settled upon his calling, master that ; *afterwards*, let him acquire just as much collateral or other knowledge, as his situation and justice to his chosen occupation will permit. But let him not fritter away his energies in an attempt to make a quart measure hold a peck, or a blanket cover an acre ; to master all the branches of medicine because he wishes to be dubbed a specialist.

Far better will it be, both for him and his patients (if he is to be a dentist,) that he spend his time and powers in obtaining that skill which he will need every day, and of which there is no danger of his having too much.

But it is said that the greater includes the less, and that anything else than a full M. D. is but a "partial culture."

The greater does include the less; but who said that dentistry was less than medicine? That is assuming the very point under discussion; arguing in a circle. Those who claim that dentistry is a specialty of medicine, would make it *less*; *we* claim that it is the proud *peer* of medical science. Not in age, it is true; we cannot look down the vistas of the past and see an unbroken succession from the times of Galen and Esculapius. But in our vigorous young manhood, in the skill and certainty we have attained in the performance of our operations, in the "good that we can do" to suffering humanity, palliative, remedial and prophylactic, we are certainly the peers of any craft, profession or calling, be it ancient or modern, be it professional or mechanical. We are *not* "the less," nor are we included in the greater.

"Anything short of a full M. D. is a 'partial culture.'"
We have shown in what seems to us an unanswerable argument, that an M. D. does not imply, or even indicate, a capacity to practice dentistry. As to the statement, that an education which fits a man only to practice dentistry, is but a "partial culture;" we admit it; it *is* but a "partial culture." But show us the inhabitant of this sublunary sphere, who has anything else than a partial culture. What title conferred by mortal man, indicates that its professor has mastered all that is to be known; that no worlds in the realms of knowledge remain for him to conquer; that all the cosmogony and theology, of the here and the hereafter, is to him but as a lesson learned? A "partial culture," it is true; but alas for human nature; it must await translation to another sphere, where knowledge and existence are alike infinite, before it can hope for more than this. A "partial culture;" yes; but Newton, the great and erudite philosopher, to whose acquirements, few if any, can aspire, much less attain, was forced to admit at the close of his life, that so far from crossing the great ocean of knowledge, all that he had done was to stroll along its shores and gather a few pebbles from the beach.

The fact is, and it cannot be disputed, that nine tenths of the practice of dentistry, is mechanical. It is worthy of notice, that the more completely we accomplish that thing in regard to which we talk so much, and we fear accomplish so little—the enlightenment of the public—the more complete the mechanical character of the practice becomes; that is, the better care people can be induced to take of their teeth: the oftener they submit themselves and their children for treatment, the less of disease as such, as distinguished from dental caries, we will have to take cognizance of, and the simpler our operations as a whole will become. If dental caries is a disease at all, the treatment of it (simple caries of course, we mean) is purely mechanical. And sometimes we think that with all our boasted progress, we who can circumnavigate the globe, can put a girdle around the earth in forty minutes, can tunnel under lakes, and rivers, and mountains, can talk through wires, and make the lifeless iron speak, who can count the very stars of the heavens, and weigh the sun as in a balance; ought to be ashamed of ourselves when we are compelled to admit that we cannot put a gold filling into a little miserable cavity in a tooth, so that it will arrest decay, or find something else that will do it.

But dental practice is not *all* mechanical; else it were a trade as is the tinker's, as it was when it began, or as is the barber's trade to-day. It requires with this mechanical dexterity, education of the brain, to know the characteristics of the parts on which it operates; it requires judgment study and thought all the way through, and these constitute it a profession. But it is a pursuit *sui generis*, of its own exclusive kind, and as I maintain, separate and distinct from all the rest. An education of the fingers far exceeding that of most of the trades; education of the head as well as the hand; judgment, skill, dexterity, and all of the highest order; are not these qualities sufficient to give us a foundation upon which to rear our own edifice, without asking to be attached like a lean-to to the great temple of

Esculapins? Do we gain dignity by clinging to the coat-tails of medicine, clamoring for "recognition," instead of standing boldly up and proclaiming ourselves, as did the infant colonies, free and independent? Away with such servile cringing; such degrading sycophancy! *They* do not want us within their doors; let us manfully stay outside, and show them that while we understand *our* business, we do not claim to understand theirs. Let us show them that we mean to be *dentists*, and not medical specialists. Let us know enough of the branches common to both professions, to enable us to consult with them intelligently; enough of their profession to know when we should hand our patients over to them. Let us respect their rights and knowledge in their department, as we ask them to respect ours, and not interfere with their pills and powders, or undertake to treat teething children or miasmatic influences. Let us ask them to study so much of our professional knowledge, as to know enough when anything is the matter in the region of the mouth, to consult an intelligent and skillful dentist, and be willing to abide by his advice; and let us during such intercourse, not endeavor to create the impression upon the mind of either the physician or patient, that we are physicians, which we are not, and understand medicine, which from the nature of the case we cannot; but rather let us show by our conversation and opinions, but above all, by our operations, that we are *dentists* and understand *dentistry*. Let each profession know thoroughly so far as necessary to each, those branches which underlie both in common; let us know in addition, all we can of the other's profession, as we do of all other knowledge which goes to make us intelligent, educated and well informed citizens. Let us make both the medical profession and the community respect our skill and attainments; but do not let us lay claim to being what we are not. Thus, side by side, and hand in hand, let the two sister professions go together, each according to the other, all the honor, dignity and knowledge to which each is entitled;

fraternizing and consulting with each other and laboring together, and in unison, for the good of our fellow men.—
Proceedings of Ill. State Dental Society.

ARTICLE IV.

The Virginia State Dental Association.

The Ninth Annual Session of the Virginia State Dental Association was held in Wilkinson's Hall, in the City of Richmond, commencing Tuesday morning, December 10th, 1878.

At the hour appointed, by reason of the heavy rain falling, it was deemed best to adjourn until 4 o'clock in the afternoon, so as to allow a fuller attendance, at which time the Association was called to order. President J. Hall Moore, of Richmond, in the chair.

The minutes of last meeting were read.

The Secretary read letters from ex-president W. W. H. Thackston, and many others, expressing regrets at not being able to be present to join in annual reunion with their co-laborers in pushing forward the interests and objects of the Association, which are to cultivate the science and art of dentistry.

Dr. Scribner stated that Dr. Norris was detained by illness.

Prof. Harris, of the Baltimore Dental College, and Mr. J. W. Selby, of Baltimore, were introduced to the Association and invited to seats.

The Executive Committee reported the following persons for active membership, all of whom were duly elected :

Dr. J. W. Tucker, of Petersburg; Dr. Henry C. Jones, of Richmond; Dr. Jno. Hartman, of Petersburg; Dr. Jno. N. Webster, of Norfolk; Dr. Edgar Hartman, of Richmond.

Prof. Harris was elected to honorary membership.

Executive Committee reported that homes had been provided for all that had applied, also that arrangements had been made for clinics.

On motion of Dr. Keesee, the annual address of the President was read, and on motion of Dr. Scribner the address was received and referred to a committee. Drs. Scribner, Cowardin and Chewning, were appointed as the committee, with instructions to report as early as possible.

Dr. Thompson moved that the hours from 9 to 11 be appointed for clinics; 11 to 2 for morning session; 4 to 7 for afternoon session; which were adopted.

Prof. Harris and Dr. Cowardin were appointed to conduct the clinics for the following morning, after which, on motion of Dr. Wood, the Association adjourned.

WEDNESDAY MORNING SESSION.

The Association was called to order at 11 o'clock, after having attended the clinic at Dr. Wood's office, conducted by Prof. Harris.

President Moore in the chair. The minutes were read and approved.

Dr. T. S. Waters, of Baltimore, was introduced and invited to a seat.

On the call for reports from committees, the Publication Committee reported that after consultation, it was deemed best not to have printed the 2000 copies of the Dental Bill to regulate the practice of dentistry in the State, as was ordered at the last session.

Report received and passed.

Indulgence was granted Committee on Operative Dentistry until further time to report, and on motion, Prof. Harris was added to the Committee.

Prof. Hodgkin, of the Committee on Mechanical Dentistry, not being present, on account of sickness, on motion the subject was taken up. Dr. Scribner opening the discussion by asking the opinion of those present concerning the use of celluloid. He always heard of his failures, but the successful patients, being satisfied, never return to report. His practice was confined almost exclusively to young patients, and so had but little mechanical dentistry to do. He asked Prof. Harris what was the general advice

given students at the College. To which the Professor replied that they did not advise the use of celluloid. In duty to students they taught them the use of all materials, but the young practitioner could not afford to risk his reputation by the use of a material that will warp, and will often disintegrate after being worn twelve months, and is, consequently, so unreliable. It might suit plain, but seldom gum teeth; it would undergo a molecular change; turn dark and soften on the surface, and, in the end, would finally give way; only a few maintained their consistency. In some cases, could scarcely tell what it was; would not even advise its use for temporary plates. On the other hand, the rubber would stand for years, and, he thought, was easier to work.

Dr. Waters' experience did not agree with Prof. Harris'. He preferred the celluloid to rubber; thought it saved time because, if the rubber was at all hastened, it would be hard and brittle. He worked the celluloid in vapor of glycerine, and after getting the plate down, fifteen minutes afterwards, dipped in cold water and cooled thoroughly before removing pressure. Silver and celluloid worked admirably together, but as the silver corroded he could only advise it on account of its cheapness.

Dr. Thompson said he had worked celluloid for four or five years and had found it to be all that he wanted; had no inflammation of the mucous membrane, and never had a gum block break; worked it with steam, and decidedly gave it the preference over rubber, but took care to let it stand as long as possible to cool off.

Dr. Mercer found it to stand equally as well as rubber.

Prof. Harris stated that, with all due respect to the opinion of those who had spoken, his mind was not changed, as he had yet to see the first plate that had not changed in color after being worn a few months. He had even known them to change in twenty four hours, and the only thing that could at all be said in favor of celluloid was that it was a rather better conductor than rubber. He always ad-

vised the patient to remove a rubber plate from the mouth at night, and thus tendency to inflammation was relieved. The material was not always to be blamed for the soreness of the mouth, as some patients kept their dentures in a less cleanly condition than they should.

Dr. Chewing had made extensive inquiries in his city and had yet to find the first one who was square with Rubber Company who did not prefer rubber.

Dr. Waters thought differently, and advised never to polish a celluloid plate beyond the use of sand paper.

Dr. Mercer said he was not in the clutches of the Rubber Company, but yet gave celluloid the preference.

Dr. Keesee said that he was very sorry that his experience in the use of celluloid had compelled him almost entirely to abandon it. He found no trouble in working it, and obtained accurate fits and all that was, perhaps, desirable in the outstart, but yet found that in a very short time the plates would turn most miserably dark (thus presenting a very unsightly appearance where the gum would show,) and had found them to wear so much that in a few months the teeth could, by slight pressure, be shoved from their place, and hence, for the welfare of his patients, he had gone back to the use of rubber.

Dr. Cowardin did not think celluloid was going to give satisfaction in the long run. Did not believe that any of the substances now in use for dental plates, if well fitted to the mouth, would give rise to inflammation unless there is a predisposition to inflammation, which arises from some derangement of the alimentary canal.

Dr. Moore asked if discoloration did not also occur with rubber. To which Prof. Harris replied, yes; but that it was only a stain on the surface, and not a change of plate itself, as was the case with celluloid.

Dr. Moore did not think that celluloid was as durable as rubber, but all mechanical work was *so cheap* that patients ought not to complain. No dentist ought to guarantee a plate to last forever. He used celluloid with satisfaction,

and would much prefer it in his own mouth, as he thought it more agreeable. Even gold would produce inflammation, and no mouth *could* be healthy where the plate was worn day and night, and not in addition kept perfectly clean.

Dr. R. Finley Hunt, of Washington, was introduced and invited to participate. He agreed that celluloid was, perhaps, more pleasant to wear; but there was not the certainty of obtaining as favorable results as by the use of rubber. If a *good* plate of celluloid was obtained, he thought it preferable. He still continued the use of dry heat, and had no trouble in warping. Being allowed to digress, he spoke at length upon the legal aspect of the case of the Rubber Company versus the dentists.

On motion the subject of mechanical dentistry was passed, and the Association adjourned to meet at 4 o'clock.

AFTERNOON SESSION.

Dr. T. S. Waters was elected an honorary member.

Dr. Chewning, from Committee on Dental Literature and Education, presented a lengthy report, prefacing his remarks by stating that the report was written before his connection with the Baltimore Dental College.

Report was received and discussed at length, especially by Dr. Wood, who felt much gratified in hearing such a report. He believed in specialties and that medical colleges were not qualified to teach dentistry, together with everything else.

Dr. Scribner moved a vote of thanks to Dr. Chewning, which was adopted, and on motion the subject was passed.

Dr. N. M. Burkholder, from Committee on Dental Pathology, presented a most welcome report, as did Dr. Thompson, from the same Committee. The reports were received and discussed by Drs. Hunt, Cowardin and Wood, until the hour of adjournment.

THURSDAY MORNING SESSION.

The minutes of last meeting were read and approved. The subject of Dental Pathology was resumed and occupied

the greater portion of the morning session, a synopsis of which only could be given, which would not do justice to the great interest manifested and participated in by so many members present. Quite reluctantly the subject was passed, and, on motion of Dr. Scribner, the election of officers was ordered as the first business to claim attention of the afternoon session.

Dr. Scribner next addressed the Association on the subject of Plastic Fillings *versus* Gold Fillings, this new departure feature being the one that seemed to disturb the dental profession most at present. He related that a few years or possibly months ago, some of the leading members would only use gold, and never a plastic filling, but for his own part he always found that he had to use discretion.

Dr. Hunt deprecated extremes; had to often adapt ourselves to the pecuniary circumstances of our patients. Did not like exactly the antagonism of plastic filling *versus* gold. Amalgam, he thought, had its many advantages, especially that of producing the hardness so often found beneath a filling. Thought the same care needed for plastic as for gold fillings. For temporary filling he preferred the osteoplastic to gutta percha. Dr. Cowardin had found tin preferable for buccal cavities.

Prof. Harris thought the failures resulted from not always understanding the nature of the case. If possible, he preferred gold, but often excess of saliva would govern what material to use. Did not agree with Prof. Flagg in his new departure theory. Thought all should study thoroughly the nature of gold. Regardless of material, we all had our failures to lament. He was an advocate of using the very softest preparation of gold, but at the same time also was eclectic in choice of materials and appliances. Did not like os artificial for approximal cavities, but preferred gutta-percha—in the use of which he always tried to avoid an excess of material. In a near approach to nerve he used the softest gutta-percha, never wishing to have anything the least escharotic.

Dr. Cowardin did not find os-artificial to suit for cavities with even nearly exposed nerves.

Dr. Scribner had found much service from the use of os-artificial.

Dr. Jones had much pain in the use, but it soon became comfortable.

Dr. Smith spoke of his experience being favorable; using, in connection, a small piece of rubber dam.

Dr. Chewning liked for such purpose Weston's non-irritant cement.

Dr. Thompson said the pain, he thought, could be avoided by using creosote with the oxide of zinc, and capping this with the oxychloride of zinc.

Dr. Keesee had used Dr. Thompson's method, in addition, using a few folds of bibulous paper moistened with creosote just over the nerve, then following up with the other preparation.

As Prof. Harris desired as little irritation as possible, he sometimes used a solution of gutta percha. He always gave the nerve a chance before he would destroy it. Had, at times, found the restoration complete, but it would take from eighteen months to three years; he would never insert a permanent filling at once. Did not like the too free use of gold in the front teeth for children, but preferred, whilst the teeth were so vascular, a plastic filling of gutta percha stopping, or its equivalent. Had experimented with the shrinkage of amalgam and found it extremely difficult to introduce a perfect amalgam filling. If used perfectly dry, it was very difficult to work satisfactorily, nevertheless, it was our duty to persevere.

On motion, the regular order of business was suspended to allow Dr. Hunt to give in detail the legal status of the Goodyear Dental Vulcanite Company *versus* the Dentists.

After which Dr. Thompson offered the following resolution, which was adopted:

Resolved, That the Virginia State Dental Association sympathize with Dr. R. Finley Hunt in his efforts to set aside the patent for the use of vulcanite, now claimed by the Goodyear Dental Vulcanite Company, and recommend that the dentists throughout the State render material aid to Dr. Hunt in his efforts to set aside the patent.

AFTERNOON SESSION.

Association called to order at 4 o'clock.

According to previous order, the Association proceeded to ballot for officers for the ensuing year which resulted in the election of:

Dr. J. Hall Moore, of Richmond, President ; Dr. J. W. Scribner, of Charlottesville, 1st Vice President; Dr. S. H. Henkel, of Staunton, 2d Vice President; Dr. A. O. Jones, of Richmond, 3d Vice President; Dr. J. F. Thompson, of Fredericksburg, Treasurer; Dr. Geo. F. Keesee, of Richmond, Recording Secretary; Dr. L. M. Cowardin, of Richmond, Corresponding Secretary; Dr. Geo. B. Steel, of Richmond, Reporting Secretary; Judd B. Wood, of Richmond; W. W. H. Thackston, of Farmville; W. E. Morris, of Charlottesville, Executive Committee.

Dr. Cowardin moved that further discussion of the subject of Operative Dentistry be dispensed with, which was adopted.

On motion of Dr Scribner, the regular order of business was dispensed with so as to allow the selection of place for holding the next Annual Session of the Association, and Charlottesville was selected; and on motion of Dr. Cowardin, it was determined that when the Association adjourned it adjourn to meet on the 3d Tuesday in August, 1879.

On motion of Dr. Steel the Committee on Dental Physiology was excused and subject passed, as also was that on Dental Appliances.

The Committee on President's address presented their report and asked that the following subjects, touched upon in the address, be more fully discussed:

1st. That part referring to the cultivation of a brotherly feeling between the members of the profession.

2d. That part referring to the Dental Colleges and the duty of the Association to help them to do the work of turning out well qualified men.

3d. That part referring to membership in the Association.

Which subjects were discussed at length.

Dr. Wood offered the following amendment to the Code of Ethics:

ARTICLE. 11—SEC. 3d. It is unprofessional to advertise by other means than a card, giving name, title and address. Which he asked to be laid over until next session of the Association.

Dr. Scribner offered the following resolution, which was adopted:

Resolved, That a committee of three be appointed whose duty it shall be to have two thousand copies of the Dental Bill printed and send the same, together with Dr. Thackston's Address, to the dentists in the State, with a memorial for the signature of the public, to be returned to said Committee to lay before our Legislature at its next session, in December, 1879.

A Committee was appointed, consisting of Drs. Thackston and Moore, those two to select the third.

The Association then adjourned to meet in Charlottesville, on the 3d Tuesday in August, 1879.—*Dental Miscellany.*

ARTICLE V.

Case of Oral Surgery.

BY H. M. GRANT, M. D., D. D. S.

Reported to the Abingdon Academy of Medicine, February 3rd, 1879.

About the first of November, 1878, I was consulted by Mr. J. H. D., aged 23, who was suffering from an immense tumor, situated in the roof of his mouth and almost filling the oral cavity. The history of the case as given me by the patient and his family was as follows :

In September, 1873, he received a blow upon the right superior maxillary, by a fall, by which the second superior molar tooth of that side was broken off, and the palatine fang driven up into the roof of the mouth, within the body of the bone. Some eight months afterwards, he felt a hard tumor or protuberance near the mesial line of the hard palate, which continued to increase in size up to the time I first saw him.

Upon examination of the case, I found the tumor to be tubelated or of irregular form, very firm in texture, filling the entire oral cavity, its base extending from the palatine surface of the incisor and cuspid teeth (which were all displaced, being pressed forward, until their position was almost horizontal with the plane of the coronal points of the upper teeth in their natural position,) to the posterior border of the hard palate, and base of the azygos uvulæ

muscles, and laterally from the palatine border of the alveolar of the bicuspid, and molar teeth on the right side to the same point on the left—encroaching upon the molar teeth and bicuspid, until they were also forced out of position, and some of them protruding through the cheek on either side. The jaws being distended to such an extent from the growth and size of the tumor, that his countenance was most hideously disfigured, and the patient an object of commiseration.

The integuments and mucous membrane had assumed a livid and congested appearance; but no ulcerative action had taken place, except from the laceration of the cheek by the protruding teeth on either side.

Having determined upon excision, the following mode of procedure was adopted. The patient was given *vi. grs. quinia* one hour before the operation was performed to prevent shock. He was then brought under the influence of chloride ether, consisting of 2 oz. of the former to one of the latter. The upper teeth were then all extracted, the first and second molars of the left side having been extracted some years before.

An incision was then made from the alveolar border of the central incisors backward along the mesial line, to the posterior border of the hard palate or periphery of the base of the tumor; another incision was made from a point opposite the anterior approximal surface of the first molar on the right side, to the same point on the left, carried down through the mucous membrane and integument, as deep as the texture of the tumor would admit. The flaps, so to speak, were then dissected up and carried to, and held to either side by small flexible tenaculum prepared for the purpose, and attached to adhesive strips on the outside of the oral cavity. The body of the tumor was thus brought to view. Then with a dental burring engine (Morrison's,) with a small steel circular saw or disk, the substance of the tumor was then cut away in sections down to the hard palate or bone, being very careful to preserve its surface in-

tact and uninjured. After the tumor was removed, the surface of the bone was thoroughly scraped with round pointed scrapers with cutting edges. The four flaps of mucous membrane trimmed to fit, being careful to shape them to correspond with the arched roof of the mouth and brought together and held in juxtaposition by interrupted sutures made with silver wire, three on either side of the central point of union of the flaps, and held in position in contact with the arch, by means of a spiral roll of lint. Kept in position by means of a small spring, made of gold plate, so bent or curved to fit the arch, and attached to a support resting upon the crowns of the second lower molar teeth. The jaws brought into their natural position and bound by a bandage, such as is used in fracture of the lower jaw. A piece of semi—vulcanized rubber, being interposed as a support for the lower jaw, and for the admission of nourishment during the healing process.

The hemorrhage was but slight and controlled by Monsel's persulphate iron. The patient soon recuperated from the effects of the anæsthetic and vi. gr. of quinia was again administered. The oral cavity thoroughly washed with a solution of carbolic acid alternated with phenole sodique for 10 days. The wound healed rapidly and kindly and I am happy to state my patient has entirely recovered, and will be supplied with an upper denture, as soon as the absorption of the alveolar process has taken place.

I think that it was a fibro-cellular tumor; its weight two hours after excision was 4 oz. and 8 gr. Its texture was very firm, so much so as to resist the action of the knife, and could only be removed with a small circular saw or disk, and preserve the arch or roof of the mouth intact.

EDITORIAL, ETC.

The Thirty-Ninth Annual Commencement of the Baltimore College of Dental Surgery was held at the Academy of Music, on the evening of March 6th, 1879, before a large and brilliant audience, composed in a great part of ladies, as is usual on such occasions. The Faculty of the College, many of the Alumni and the Graduates, occupied the stage together with a number of others distinguished in the dental and medical professions. The legal profession was represented by the Hon. Judge George Wm. Brown, of Baltimore.

The Fifth Regiment Orchestra, Professor Itzell, director, rendered a number of fine selections during the evening.

The exercises were opened with prayer by the Rev. Julius E. Grammer, D. D., rector of St. Peter's Church, Druid Hill Avenue.

The announcement of graduates was made by Prof. F. J. S. Gorgas, Dean, embracing the following, forty-one in number:

SUBJECT OF THESIS.

A. M. I. Hein,	<i>Germany.</i> —The Teeth.
A. H. Griefenhagen,	<i>Germany.</i> —Extraction of Teeth.
Samuel Edward Jones,	<i>Texas.</i> —Dental Caries.
Frank Pearce Bernard,	<i>Pennsylvania.</i> —Special Senses.
William Rust Laws,	<i>Maryland.</i> —Irregularity of the Teeth.
Juan Bautista Lombard,	<i>Cuba.</i> —Stomatitis.
Edwardo Lombard,	<i>Cuba.</i> —Aneurisms of the Tongue.
Bolivar J. Quattlebaum,	<i>South Carolina.</i> —Alveolar Abscess.
William Roberts Renalds,	<i>Virginia.</i> —Dental Caries.
James Armstead Colvin,	<i>Virginia.</i> —First Dentition.
Laurence Stafford Wolfe,	<i>S. Carolina.</i> —Stomatitis.
Charles M. N. Latimer,	<i>Dist. Columbia.</i> —The Teeth of Man.
Andreas C. Ferrari,	<i>Russia.</i> —Treatment of Dental Pulp.
J. Allen Patterson,	<i>South Carolina.</i> —Treatment of Dental Pulp.
Gordon White,	<i>Tennessee.</i> —Neuralgia.
Frank Brumit Perry,	<i>Virginia.</i> —Treatment of Dental Pulp.
Arthur Monroe Rice,	<i>Connecticut.</i> —Treatment of Dental Pulp.

John C. Wilkerson,	<i>Alabama.</i> —Dental Caries.
Robert P. Fletcher,	<i>Virginia.</i> —Treatment of Dental Pulp.
John Madison Phillips,	<i>N. Carolina.</i> —Treatment of Dental Pulp.
Richard Hance Billingsley,	<i>Maryland.</i> —Maxillary Sinus.
Thomas Sadler Jordan,	<i>Alabama.</i> —Dental Hygiene.
William M. Rawlinson,	<i>South Carolina.</i> —Filling Teeth.
Thomas G. Morrow,	<i>Maryland.</i> —Circulation of Blood.
Richard Grady,	<i>Maryland.</i> —Treatment of Pulp.
John P. Coult,	<i>New Jersey.</i> —Treatment of Pulp.
Charles Eckhardt,	<i>Louisiana.</i> —Odontalgia.
William H. Weems,	<i>Texas.</i> —Treatment of Pulp.
Francis S. Harris,	<i>North Carolina.</i> —The Care of Children's Teeth.
Edwin D. Akers,	<i>Pennsylvania.</i> —Inflammation of Gums.
T. Disbrow Stone,	<i>New York.</i> —Caries.
Elroy F. Cross,	<i>Massachusetts.</i> —Treatment of Pulp.
Edmund C. Bryant,	<i>Maine.</i> —Treatment of Pulp.
Edwin J. Parkison,	<i>Maryland.</i> —Salivary Calculus.
Alfred F. King,	<i>New York.</i> —The Six-Year Molars
Hall Lewis,	<i>District Columbia.</i> —Treatment of Pulp.
Samuel M. Roach,	<i>Georgia.</i> —Filling Teeth.
Edward Flannigain,	<i>Maryland.</i> —Artistic Dentistry.
Richard B. Winder, Jr,	<i>Maryland.</i> —
John A. Millard,	<i>France.</i> —
Henry Bentley,	<i>Connecticut.</i> —

Sixteen of the United States were represented, and also Germany, France, Russia and Cuba.

The degree of "Doctor of Dental Surgery," was then conferred upon the above named Students by Prof. F. J. S. Gorgas, Dean of the College. Before conferring the degrees the Dean announced the union of the Maryland Dental College with the Baltimore College of Dental Surgery, under the Charter of the latter; and also the election of Professor Richard B. Winder, D. D. S., M. D., to the chair of "Dental Surgery." The Faculty as now constituted is as follows:

FERD. J. S. GORGAS, A. M., M. D., D. D. S., Professor of Pathology and Therapeutics.
E. LLOYD HOWARD, M. D., Professor of Chemistry and Materia Medica
JAMES H. HARRIS, M. D., D. D. S., Professor of Clinical Dentistry.
JAMES B. HODGKIN, D. D. S., Professor of Dental Mechanism and Metallurgy.
THOS. S. LATIMER, M. D., Professor of Anatomy and Physiology.
RICHARD B. WINDER, D. D. S., M. D., Professor of Dental Surgery.
GEO. H. CHEWNING, D. D. S., Demonstrator of Operative Dentistry.
AUGUSTUS W. SWEENEY, JR., D. D. S., Assistant Demonstrator.

JOHN C. UHLER, D. D. S., M. D., Demonstrator of Mechanical Dentistry.

LUKE J. PEARCE, D. D. S., Assistant Demonstrator.

CHARLES F. BEVAN, M. D., Demonstrator of Anatomy.

The Valedictory Address was delivered by Rev. Alex. W. Weddell, D. D., of Richmond, Va., who, in his interesting and highly appreciated remarks, alluded to the origin of the valedictory, and said that after his own experience as a graduate, listening to a valedictorian for two solid hours in the heat of a July sun, he could appreciate the graduates' feelings when waiting to receive the smiles and congratulations of their many fair friends, and would hail with cordial support a seventeenth amendment prohibiting their appearance forever on American soil. The Baltimore College was highly eulogized by the speaker, who touched upon the various courses of study, and said that each one of the graduates on this occasion had a solid foundation on which to build their super-structure. "Those who had left this, the oldest institution in the country, and who now numbered nearly 900, have proved to the world that the work of the College has not been misjudged."

"The Dean of the Faculty in placing in your hands, young graduates, the diploma of the college, has placed among these other names your own, and it rests upon you to see that the honor is well sustained. The woes of humanity, like the wounds of Cæsar, are voiced in prayer for help. To such prayer your hearts lend a responsive ear. The deeper your insight in the evil threatened and into the evil existing, the greater will be your determination to toil after the best preventive and the most certain cure, and your professional pride, saturated with generous sympathies, will render you liberal, and such a life can never know the shame of failure."

This address will appear in the April number of the Journal.

The Class Address was delivered by Frank B. Perry, of Virginia, of the graduating class, and was a well prepared oration, fluently spoken.

The graduates were the recipients of many beautiful bouquets on receiving their diplomas.

The benediction, by the Rev. Dr. Grammer, closed the exercises at the Academy.

The number of matriculates for the session just closed, was eighty-two.

The Fortieth Annual Session will commence on the 15th of October, 1879, and continue until March, 1880.

Meeting of the Alumni Association of the Baltimore College of Dental Surgery.—The annual meeting was held in the College Building on the morning of Commencement day, commencing at 11 o'clock.

Dr. S. J. Cockerille, of Washington, D. C., of the class of '53, presided, with Drs. H. B. Noble and W. A. Mills as Vice Presidents, and Dr. Thos. H. Davy as Recording Secretary. There was a very large number of Alumni present, and the meeting was a very interesting one.

The address to the Alumni was delivered by Professor F. J. S. Gorgas, and was paid marked attention. Dr. Gorgas impressed upon the minds of those who were about to enter upon the profession what is meant by self knowledge; that duty consisted of honest, conscientious acts, and the reward, the good of mankind. He said that science was a jealous mistress, was progressive and researchive, that science and art were advancing with rapid strides, and that no profession had made more progress in so short a period as the profession of dentistry. We have a desire in this age to hasten things, and even colleges do not escape the mania. Yet he would warn the student not to attempt too much in too short a time; we must give proper time to all science. Dental science was a noble one, going hand in hand with others, and entitled to a position in the foremost rank, and though her progress had been rapid, it had been satisfactory, and was to-day a vast improvement on the dentistry of the past. In closing, Dr. Gorgas made mention of Dr. J. H. McQuillan, who died in Philadelphia on Wednesday last.

A committee of which Prof. J. B. Hodgkin was chairman, appointed to consider life insurance, reported it inexpedient to legislate at this time.

Resolutions offered by Dr. W. H. Hoopes on the merging of the Maryland Dental College with the Baltimore College of Dental Surgery were adopted, Dr. Henry Noble, of Washington, seconding the motion.

Resolutions of regret at the resignation of Dr. B. M. Wilkerson, Demonstrator of Operative Dentistry in the college were adopted.

The Committee appointed to award the prize for the best Thesis, on the conservative treatment of the dental pulp, consisted of Drs. W. H. Atkinson, C. S. Hurlbut, H. B. Noble and J. C. Green. The Committee to award the prizes for the best piece of plate-work, and the best gold filling in specimen tooth, were Drs. D. McFarland and W. W. Evans, of Washington, and Jas. F. Thompson, of Va.

Dr. C. S. Hurlburt, as chairman of the committee, then announced the prizes offered to the present graduates of the Baltimore College:

The first prize, set of Varney's pluggers, for the best thesis on Conservative Treatment of Dental Pulp, Andreas C. Ferrari, of Russia.

Second prize, "White" dental engine, for best plate work, Bolivar J. Quattlebaum, of South Carolina.

These prizes were offered by Dr. S. S. White, of Philadelphia.

Third prize, Harris' Medical and Dental Dictionary, for best filled specimen tooth, J. Armstead Colvin, of Virginia.

This prize was offered by Professor Gorgas.

Dr. Hurlburt then announced two prizes awarded by the Maryland College:

First prize, "White" dental engine, for best plate work, E. J. Parkison, of Maryland.

Second prize, set of Varney's pluggers, for best thesis on conservative treatment of dental pulp, Richard Grady, of Maryland.

These prizes were also offered by Dr. S. S. White, of Philadelphia.

The Alumni of the Maryland Dental College were then by vote made members of the Alumni of the Baltimore College of Dental Surgery.

An address by the President, S. J. Cockerille, on the aims and teachings of Dental Colleges followed, the speaker warning the graduates against the errors and charlatany of the age.

A committee of five, consisting of Drs. Gorgas, Hodgkin, Cockerille, Hoopes and Davy, were appointed on the subject of an annual banquet.

A resolution was offered by Dr. James F. Thompson, and adopted, making provision for founding a library in connection with the College.

The annual election of officers was then held, resulting in the choice of Drs. C. S. Hurlburt, of Massachusetts, as President; J. F. Thompson, of Virginia, First Vice, and Henry Noble, of Washington, D. C., Second Vice President; W. H. Hoopes, of Maryland, Treasurer; W. A. Mills, of Maryland, Corresponding Secretary, and H. M. Schooley, of Washington, D. C., Recording Secretary.

Dr. Thomas S. Latimer was chosen as the orator of the day for the next meeting of the alumni.

Dr. D. McFarland, of Washington, was elected an honorary member of the alumni, the college of which he was an alumnus having passed out of existence.

Dr. Cockerille on retiring from the chair, took occasion to thank the members for the aid, support, sympathy and courtesy which he had met with at their hands, which had made the position a pleasant one.

The newly elected officers were then conducted to the several chairs, the President, Dr. Hurlburt, returning thanks for the honor conferred, and in a short address alluded to the high standing of the College, the oldest in the world, and also of the high character of the men whom she had given to the profession.

Dr. Cockerille delivered a brief eulogy on the late Prof. Philip H. Austen, speaking of his life, character and superior attainments in the highest terms.

With the appointment of the Memorial Committee, consisting of Dr. S. J. Cockerille, Chairman; and Drs. T. H. Davy and R. B. Winder, the annual session of the alumni closed.

BANQUET.—The Alumni banquet at the Howard House, which followed the Commencement exercises, was partaken of by about one hundred and fifty guests, and was a most elaborate affair, The "menu," which was gotten up in excellent style, consisted of twelve courses, served under the direct supervision of Mr. Ballard. On the cloth being removed the following toasts were given and responded to:

"The Coalition of the Colleges." Response by Hon. Judge G. W. Brown.

"Baltimore College of Dental Surgery." Response by Dr. S. J. Cockerille, of class of 1853.

"Dental Education." Response by Dr. J. F. Thompson, of Virginia.

"Alumni Association of the Baltimore College of Dental Surgery." Response by the President, Dr. C. S. Hurlburt, of Massachusetts.

"Our New Alumni, the graduates of '79." Response by Dr. John A. Millard, of France.

"The Medical Profession." Response by Prof. E. Cutter, of Boston.

"The Dental Profession." Response by Dr. R. B. Donaldson, of Washington, D. C.

"To the members of the Medical Profession who are teachers of Dental Students." Response by Prof. W. H. Atkinson, of New York.

"The Dental Profession of Europe." Response by Dr. A. C. Ferrari, of Russia.

"Dental Profession of New York City." Response by Dr. Parmley Brown.

"Dental Profession of Washington, D. C." Response by Dr. H. B. Noble, of Washington, D. C.

"Electricity in its Relations to Medicine." Response by Dr. J. J. Caldwell, of Maryland.

MONTHLY SUMMARY.

Good Effects of Ligation of the Thighs in Obstinate Epistaxis.
—*Gazette des Hôpitaux*: M. Blondeau reports the case of a gouty subject who had an attack of epistaxis in which nearly two quarts of blood was lost, and which ceased only upon the occurrence of syncope. Eight days later a second attack occurred. Injection of cold water containing perchloride of iron were first tried in vain, and a ligature was then applied tightly to the middle of the thigh. The hemorrhage ceased almost immediately, but re-appeared on the following day shortly after the ligature had been moved. The ligature was again applied with equal success, but its removal was again followed by recurrence of the epistaxis. The treatment was persevered in, and finally, after several days, the hemorrhage ceased completely.
—*Louisville Medical News*.

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ARTICLE I.

Foul Breath.

BY J. T. CODMAN, D. M. D.

(An Essay read before the joint meeting of the Mass. Dental Society and the American Academy of Dental Science. Boston, Jan., 1879. Published by vote of the latter Society.)

The subject of which I propose to treat to-day is not an inviting one. It is shunned by most writers, and articles treating of it in dental journals are very rare. The question naturally arises in our minds, what is the reason of this almost total neglect of this very important topic, which, if not one absolutely belonging to our specialty, is one so intimately connected with it that it should interest every member of it.

I cannot but think that the neglect is occasioned by want of that knowledge of its primary causes, and a lack of general knowledge of the relation of all the organs, one to another, that work together for the sustenance and maintenance of the life and health of our corporate frames; and that this want pervades both the dental and medical professions.

For what other reason could such an important subject be ignored? Does it not intrude itself upon us everywhere—in the street, in the coach or car in which we travel, and in our homes? Are we not annoyed at every turn—at the place of amusement, at the church and the lecture? Oft-times we meet the intelligent and the able, the profound and the artistic. They may have earnest and noble faces; their conversation be rapt and energetic; but we turn away in disgust from the foul odor that comes in the same breath with words of affection, of wisdom and love. Are not our hearts pained within us, and is not our pity even greater than our disgust for the unfortunates who are thus afflicted? Must they not know that we turn away from them, and that they are shunned for no other reason than this of impure breath?

The love of purity and sweetness is inherent in our natures. It is impossible for us to remain in the closest intimate relation of personal friendship or love with those who belch forth foulness. There must, in such cases, be personal and mental reservation. A sweet breath, then, becomes a fortune and a blessing, and woe to the pretty face! woe to the loving heart! woe to the striving one who longs for higher position, for more of love or more of cares! who has it not.

But, as a class, whom doth it annoy more than the dentist, who, hour after hour and day after day, earns his bread by bending over the "gateway of life"—the breathing places of human beings—taking to his central vitality the putrid odors that emanate from the unsounded depths of foulness? But, alas for the weakness of humanity! the truth, and the whole truth (for it must be told) is, we who criticize are not exempt from this plague. Verily, have I not been offended beyond measure, in dental meetings and among dentists, by dentists themselves? Therefore should we attend to this subject; therefore should we wake from our sleepiness and supineness for our own good, and, curing ourselves, be ready to go forth to cure all others.

It being a subject connected with the primary functions of life and health, it is necessary to know something of primary functions, to understand the mode of cure; for it is a disease which unfortunately afflicts all occasionally, from the infant to the oldest person; and the paucity of knowledge of the philosophy of physiology must be the reason of the neglect of its cure.

Doubtless the causes of bad breath are numerous. Temporarily, it may be produced by any nauseous or ill-flavored thing, either chewed or used as food, as garlies, onions, snakeroot, tobacco, etc., or equally by bad-odored drinks, by simple apposition to the teeth and mouth, by diseases of the teeth—common caries—with the odor of decaying tooth substance and the remnants of food left within the cavities getting foul, also by diseased gums, which emit a peculiarly unpleasant smell.

All these troubles are embraced within one cause, which cause itself is a reason for foul breath; namely, want of cleanly habits; and all yield to judicious treatment—first, by simply paying attention to cleanliness, by washing the mouth and teeth, having the cavities filled, foul roots extracted, and the diseases of the gums cured. After these are attended to there yet remain a large multitude of persons who are afflicted, and from whom all hope of cure has fled, as much as if they had entered the Inferno, over whose gates the inscription reads, to leave all hope behind; persons who have no more idea of any cause, of their affliction, by any act of theirs, than they have of the causes of special high tides or the color of the skin of the negro.

We find, in approaching our subject, without going deeper into it than the limits of our time admit, that we must seek for the cause of the odor in emanations of the glands placed along the mucous tract, from its commencement to its close, and, of course, more particularly those of the mouth, throat, and nasal passages. We may also seek for it in the air from the lungs, as an emanation from the blood itself, concentrated and condensed on the air passages by the passing of the air through the respiratory track.

These two sources are sufficient to account for all the trouble, and we need not seek for other causes, even though there may be others; for, if we understand the philosophy of the cause of disease in these parts, we probably shall be able to understand it in all other parts of the system.

In examining the condition of health, we find that the system may, in its relation to food, be divided into three separate functions: First, the mouth, teeth and glands, salivary, tonsilary, etc., which are concerned in the preparation and passage of the food into the stomach, may be termed *organs of preparation or reception*. Second, the stomach and a portion of the alimentary canal, with the pancreas, liver and surrounding viscera, may be termed the organs of *assimilation*; and third, the remainder of intestinal canal and the kidneys, with their related organs, may be called the organs of *excretion*.

I maintain that the functions of each organ are strictly marked; that never, under the conditions of absolute health, does one organ interfere with, or accept even, the duties of another; but that, in an overworked or diseased condition of an organ, some other one may assist it in its duties, perform a portion of them, or, perhaps, for a time, the whole of its functions, as for instance, the skin, which, at a venture, we will say should only secrete a lubricating fluid for protecting its surface and adjusting the heat of the body, *may* carry off through its pores the emanations that more properly belong to the kidneys, bladder or intestines. This "interchange of function," well known to physiologists, assists us in understanding our subject; for, if my premises are right, all the impurities of the system should be removed by the *organs of excretion*, and will be so removed when they are in a state of health.

What is a state of health? The human system is like a furnace. The food we eat is the fuel. The stomach and the mouth are the cooks and wood-choppers, who prepare the fuel, and the air is the flame that burns it, blown on by the bellows, the lungs. Along the intestinal tract are work-

men that throw out the ashes of the burnt fuel into the gut that carries by its slow movement the rejected matter to the verge of the system. Let those workmen be disabled or overworked; let the motions of the rejecting canal be retarded, and the constantly accumulating secretions must find other outlets; an interchange of function takes place and, through the skin and through some of the portions of the mucous tract, the essential poison is poured out; similar organs taking on themselves more easily the interchange of function. The presence of disorganized matter is positively known by the smell. I take this as a fact not to be disputed, that where there is an ever present disagreeable odor there must be disagreeable, or in other words, *poisonous matter* present; matter that should be eliminated, and which is detrimental to health, and, therefore, the organs containing it are in a state of disease.

But here I am met with the objection that some persons are entirely well, with the exception of foul breath, and I must account for that condition separately. Doubting the fact I will, however, try to do so.

Every human being has a certain amount of vitality—some more, some less. *Great vitality signifies great fire, active lungs*, active motions of blood, stomach, heart, bowels and brain. Everything eaten is appropriated, and is burned to ashes; not alone what is best for sustenance, but what is *poor* for sustenance; whatever is put in for fuel. As in the great Boston fire, six years ago, woolen goods burned like oil, and the very slates and the granite itself were burned to ashes. But such vigorous natures are *rare*. Some fires burn slowly. They do not even consume the purest elements of combustion, and cannot burn what is ordinarily non-combustible; and, therefore, such things must be got rid of in some other way if they are placed within the system.

Want of power, then, or weakness in the organs of assimilation, stands first in the way. If the stomach is not able to discharge easily the duty put upon it, irritation of the

mucous membrane takes place, which rapidly extends over its surface. What is meant by extending over its surface? It means that the irritation that would be dangerous or fatal to the vitality of the membrane if confined to one spot or, more strictly speaking, to the mucous cells that compose the special surface irritated, by the power of cell contact, or by the intrinsic incorporated power in the cells themselves, distribute the disease or the irritation more widely, thereby reducing its power over any one spot or section of mucous surface.

We have always to remember that irritation produces an *increase of activity*. If a surface is in the condition of secreting any given fluid, slight irritation increases its secreting power. If the irritation is greater, inflammatory action takes place which may reverse the glandular action and, for a time, the secretions may give way to feverish or heated conditions; but we must always remember, and place it as the *corner stone* of our investigations, *that disease is the manifestation of an attempt on the part of nature to cure some ailment*. It is the process of work to rid the system of injury and affliction.

We will take the case of an overloaded stomach for illustration. Persons who are liable to chronic bad breath will have it come on under such a condition. An hour or two after eating a tainted breath is noticed; it increases rapidly and constantly until the stomach appears to be entirely empty. Even then it may continue and increase, but, if fasting is continued long enough, it disappears and purity returns.

I have said that the organs below the stomach should perform all the acts of secretion. If they perform their nominal functions thoroughly, there will not be any taint of breath; for the food, after remaining in the stomach a certain length of time, will be passed from it into the small intestines, where all unfinished processes will go on to their completion, or it will rapidly be passed to the more especially excretory organs; but with the greater portion of

persons, who live on the average diet of Americans who reside in our cities, with their sedentary habits and want of vigorous labor or play, this is not the case. The fire which should burn brightly, that should burn all fuel to clean ashes, smoulders and smokes, and the mucous membrane, which cannot absorb the weighty *debris* of the system, nevertheless endeavors to assist in carrying off the superfluous load. It does this by a vicarious exchange of function, taking a share of the work, by carrying off some of the smoke and foul gases produced by the imperfect combustion, or, in other words, imperfect digestion, and the fermentation of more food than the stomach can wrestle with.

The proper balance of diet in its vegetable, animal, and mineral constituents will, as far as diet is concerned, produce health; but it is necessary that all the surplus that is not retainable as nourishment and fat be thoroughly eliminated from the system; but to do this the excretory organs must be in *active working condition*. It must not be necessary to coax them to perform their duties, but they should be in condition to command obedience with a force that must be at once obeyed.

If these organs are not capable of this duty, and cannot fulfil it completely, some portion of the *debris* must remain in the system; and as it is poison, as it contains in itself the elements of death, it cannot be stored in any one organ without danger of fatal sickness.

Nature by the same mode of interchange of function distributes it throughout all the organs that possess any excretory powers. She loads the blood with it; she lines the air-passages of the lungs with it; she forces it out through the skin. Wherever she can oxydize it she tries to do it; for that destroys its action. But where it accumulates in large amounts, it is liable to a sort of spontaneous combustion, attacking veritable tissue—and especially the delicate tissues of the lungs—burning and destroying them like a fire. Things at first unattackable, get involved;

heat produces heat; the firm tissues that resist ordinary attacks burn, and the currents of the blood like untoward winds scatter the firebrands through the whole organization. This is consumption; but mark this important fact, for it is probable that you hear it announced for the first time, that pulmonary *consumption is a secondary disease, the primary cause of which is defective excretion*, and it has its primary seat in the excretory organs. When physicians adopt this view of mine and direct their observations to this cause, they will find that there is a *cure* for this dreadful disease.

I said Nature loads our blood with *debris*. How do I know it? By the fact that it can be smelled in the blood. The normal blood has an odor but not the rank, disagreeable smell we sometimes find coming from the blood of some wounded persons. To the mucous membrane she seems to have delegated, when necessary, the province of carrying off first bad odors and secondarily mucous deposits.

I have spoken of this as an interchange of function; but when we consider that the mucous membrane lines the whole intestinal track, the whole internal, preparative, assimilative and excretive track, as far as the alimentary canal is concerned, and that the mucous membrane of the bowels is so intimately connected with the excretion of *highly offensive odors*, the office may be said to be one of the normal duties of that organ or membrane.

Whether my theories are correct or not, it is a fact that certain habits will bring on and continue foul breath, and I am convinced that the largest cause is found in constricted, irregular and costive habits of bowels, and that for its cure particular attention to regulating this portion of the system is absolutely necessary.

The next cause, and intimately connected with the other, is overloaded and dyspeptic conditions of the stomach. This fact is easily demonstrated. Let any one who has the tendency to inflamed condition of the mucous coat of the mouth, throat and surrounding parts, eat an over-full meal

of even the simplest substances, under conditions that do not favor the digestion of it, and it will bring on the trouble. A hearty meal just before bed-time, will probably produce it during the night, so that on awakening in the morning the mouth will be noticeably dry and foul. So also will the tendency be kept up by *too frequent meals*. It were better that we all had an interval of six hours between each meal. The stomach should have time to rest, and food must have time to digest; articles taking *five* hours time *cannot* be digested in *four* hours, and no new food should be mixed with the partly digested material. This, I am sure, is one of the *most fruitful causes* of inflamed mucous membrane and bad breath.

But if the presence of food at the wrong seasons and in over quantities produces trouble, how much more so will wrong food in great quantities stimulate and produce it? I cannot do better than to refer any one interested, to the well known tables of digestion founded on Dr. Beaumont's experiments with Alexis St. Martin, for the only positive knowledge we have of digestion in the live, human stomach, and also to his "experiments," crude and unmethodical as I think they often were, as proving some important facts regarding inflammation produced by various substances, foods, condiments, &c. A large essay could be written on this single point of our subject, but I can only glance at it.

Spices and heating condiments, as a rule, should be avoided. Under certain circumstances they may be used as medicine, but as food, and as pleasurable excitants by one who has the tendency named, they should be shunned. Let me give the reason *why*; for I am sure I have never heard it properly given. Spices form compounds with animal and vegetable substances, thereby retarding or preventing decay; or in other words they prevent the rapid separation of food into soluble parts, and being able to do it outside of the system, will, in the same manner, prevent rapid digestion in the food receptacles, which is a process not entirely unlike decomposition—the first process of

decay. Let me advance a step further and give a *rule of digestion* discovered by myself. Rule: All articles of food easily decomposed by warmth and moisture out of the human stomach are easily digested in the stomach; and all articles which are slow to decompose under such circumstances, are slow of digestion; the ratio of digestive process being proportionate to the process of decomposition.

This rule holds good with some few exceptions.

Large quantities of fluids are irritants to some persons, by *floating food* and preventing digestion. I am certain that fluids are often difficult of absorption, and remain in the stomach a long while, probably from some inaction of the secretory glands. I refer to the simple fluids, such as *water, milk, soup, etc.*, but the presence of stimulating drinks, as rum, brandy, gin, etc., have a well known effect, and will produce, almost immediately in some cases, by irritating the mucous membrane, a bad taste in the mouth and bad breath.

I have spoken of the bad odor of the breath being a sort of *smoke of unburnt food*, but the continuance of this disease is, I am sure, always accompanied by phlegm and catarrhal troubles. When the membrane cannot discharge from itself the load that is placed upon it, it clogs up and the secretion becomes viscid and abundant. It attaches itself to the surface in a ropy, adhesive mass. It is a carbonaceous deposit, and would indicate, it seems to me, the presence of too much carbonaceous matter in our food, that the system is trying to get rid of; and I suggest that the diet should be deprived of a portion of such matters, in the form of grease, butter and milk, and that in their places be substituted fruits, or peas, beans, and green vegetables, or what is better still, if one can get exercise or vigor to digest them, turnips, radishes, celery, and all the anti-scorbutics.

I must here mention one other cause of trouble; the presence of un-masticated food, half-chewed, bolted, gobbled down, any way it can be got into the stomach. Observation

leads me to think that nine-tenths of the trouble arising from the use of various articles of food *denominated unhealthy*, is from want of *proper mastication*; and I would also lay down this rule to parents. Rule: If you want your children healthy, teach them to chew their food fine and eat slowly. Do you think they can learn it themselves? So can they learn to read and write, to comb their head and brush their teeth; but how much better can they do these things with instruction? And why should the important instruction in chewing food be neglected? Is it not more important than music or dancing, or the infantile theology that is so much taught, or the molecular theory taught to my twelve-year old girl?

Everything that *disturbs the digestion*, either from *internal* or *EXTERNAL causes* will *prevent* the cure of this disease. *Want of exercise, too much worry and mental strain*, too much sensuality, all conspire to prevent the physiological fires from consuming the fuel without smoke.

To those to whom this disease comes as an affliction, we must tender our regrets; they can study the hints here thrown out: they can know they have our sympathies; but from those who nasty their mouths by their own filth—by uncleanness, by vile and dirty habits, we must withhold them. We are members of a profession that teaches cleanly habits, and to make our teachings effectual we must be cleanly ourselves. Lenient as I am, and as I hope all of us may be to such, I cannot conceive how any dentist can approach his patients with a befoulment of fresh garlic, onions or tobacco in his mouth; but disagreeable as this is or may be to most persons, it is yet weak and unobnoxious compared with the nastiness of garments and mouth filled with the stale, second-hand odors of strong cigars or pipes that some of my friends are in the habit of using, and I am sorry to say that they are as innocent of their faults in this respect as babies. Let me draw you a picture.

Some years ago I knew a young dentist who smoked tobacco. He did it genteely. He smoked a very mild-

flavored cigar. He drove into the city, and when he arrived at his office, he put away his garments carefully, and he thought he disguised the habit from his patients; they did not complain. He did not desire to surrender the habit, and he did not wish to offend his patients. *He thinks he does just the same thing now!* I doubt that any one here could convince him to the contrary, and he will think that I am joking, and do not, cannot mean him, so slowly has the vile habit crept on him. To-day he smokes a stinking thing; rank, outrageous, which is an offence to good taste, decency and manners. He should mount to his attic and there fume away if he must; but no, he will stand and blow his villainous smoke square in your face. He forgets good taste and walks the street with a cigar in his mouth; and when he enters the presence of ladies he carries with him a feeling of disgust and a nasty smelling breath, that is as hard for *them* to bear as some of the breaths of his *highest flavored patients* are for *him*. What excuse is there for such a man who outrages decency in such a manner, and talks to his patients loudly about brushing their teeth and keeping their mouth clean? There is just one man worse than this one. It is he who adds this befoulment to an already stinking breath.

But I must sum up my remarks and then close, first noticing the fact that there is an important item yet to be investigated; and that is whether foul breath is a disease which is catching, or can be conveyed from one to another. I am of the opinion that it is. In a system without any tendency that way, the over-laden breath may pass into the lungs from another person and no bad results be noticed; but as is probably the case in conditions favoring diseases of this sort, there are spores or seeds of disease, or there are *vibriones*—minute animal life floating in air and feeding on, as well as producing diseased conditions that may pass from mouth to mouth and breed the same disease by contact in another system. I have had one or two attacks of disordered mucous membrane after working for persons of pecu-

liarly foul breath; and although I cannot say positively that I can trace it to that cause, I am and have been seriously suspicious that it had much to do with it.

I have not in this essay proposed any course of medical treatment; and yet in some cases I have no doubt that a mild purgative or cathartic would assist temporarily in removing the trouble; but my theory of medicine is, that if the articles we call medicines, which consist to a great extent of concentrated bitter herbs, could have been supplied with our food, i. e., if they had not been purged from our food, or the portion of food producing the same effect in the natural way been taken from our diet, we should go along pretty well without purgatives of any sort.

But what palliative shall the dentist have who, when bending over his patient suddenly discovers that there is an unpleasant taint on his breath? The first thing he must do, and as a rule, *do it always*, when working for a patient, is to *close his mouth tight and breathe through his nose*. Have at hand some disinfectant, as lime-water and chalk, chlorate of potash in solution, or in the dry powder, Burnett's milk of magnesia or some other good mouth wash, and every chance he can get, make for the remedies, rinse the mouth rapidly and silently and run back to his patient, and keep his mouth closed. Another remedy or palliative is to keep the mouth wet with fresh saliva. This can be done by chewing some inodorous thing, a piece of paper, wood, or better still, a small piece of gum elastic; the flood of new saliva will temporarily drown out the excretions. Do not use snake-root, cardamon seeds and similar drugs, for the remedy is often as bad as the disease; rinse with cool water, and try the bit of elastic gum, taking it out when your patient has gone.

Cure the disease if you can! This is important. *Increase your vigor by exercise, and abstinence as well.* PLAY!! I wish we Americans could *play*. Play ball as a *frolic*, and not as hard work; not at the risk of broken fingers and bunged eyes, but for the *fun* of the thing, and *dance*. Inhale and exhale the pure air; oxydize the food and blood; *that* will kill the odors.

What result but a *fatal* one must come from the inhalation of

our own diseased *emanations*? Hour by hour, day by day, and night by night drawing in with each breath such horrid odors, what but consumption will result from it?

I know not if any statistics can be found on the subject, but I will venture to say that continuous foul breath must finally increase the consumptive tendencies of those who have it, and for two reasons. First, it shows a weak tendency in the individual, and, secondly, it will react on itself by returning the odors with their poison into the system.

Let me finish here, by asking the members of our profession to give more attention to this important subject, by thanking you for your attention, and by urging you not to accept superficial answers to inquiries on all physiological questions, but to think for yourselves and not be satisfied with the mere outward descriptions of organs, but to go further and construct a *philosophy of physiology*, as I have tried to do, which shall be as a map for you by which you shall see the way of the workings of nature in the human system, and make normal and diseased action plain and simple.

It will give me pleasure, some time, to explain to you how far I have satisfied myself on this subject, and what points are in doubt, in my mind; but I have satisfied myself that the *philosophy* of physiology is extremely simple.—*Missouri Dental Journal*.

ARTICLE II.

The Use of Chloroform in Dental Operations.

Extract from Proceedings of the Odontological Society of Great Britain,
November 4, 1878.

The President proceeded to open the discussion on "The Use of Chloroform in Dental Operations." He began by reminding those present that the discussion had been suggested by the editor of the *British Medical Journal*. In commenting on the death of a child in May of this year, from the effects of chloroform, administered to facilitate a dental operation, he concluded his remarks on the case with the following query: "Is it ever right to give chloroform

for dental purposes? We wish the Odontological Society would pronounce an authoritative opinion on the subject, and we should hope that if they were to do so they would absolutely forbid it." It was well known that the editor of the *British Medical Journal* had for a long time past taken a deep interest in the subjects of deaths from chloroform, and that he had repeatedly expressed a very decided opinion as to the danger and responsibility attached to its use. As the result of this deliberately formed conviction, he had called upon the society to express its opinion on a practical question of the utmost importance, and he (the President) thought that they ought to respond to the call. If, as the writer of the article implied, the use of chloroform for dental operations was really unnecessary, then undoubtedly those who continue to employ an agent whose use might be attended with such terrible consequences incurred a most serious responsibility. There were several subsidiary points of great interest which might be discussed, but, as it was important to endeavor to arrive at some definite answer to the question he had quoted, he thought it would be better to confine the discussion to it in the first instance, viz: "Is it ever justifiable to administer chloroform as an anæsthetic for dental operations?"

Mr. Clover, unfortunately, was unable to be present, but had expressed his opinion in a letter. He was, however, pleased to see several gentlemen present who had had great experience in the use of anæsthetics, and he hoped that they would favor the society with their opinions. Mr. Clover's answer to the question was as follows: "I think chloroform may be justifiably given in cases of dental operation in which complete quietude of the patient is necessary for more than two minutes. Ether would be somewhat less dangerous, but it is very difficult to keep the patient absolutely quiet, and the bleeding is considerably increased when ether is used."

Mr. Browne Mason, of Exeter, had also written to the Secretary as follows:

"To this question, Is it justifiable to administer chloroform for dental operations? I would say that if anæsthesia by chloroform is justifiable at all, it is as much so in dental operations as in any other. Nitrous oxide gas does not answer for prolonged operations by reason of the transitory nature of its effects, so there is nothing left except ether or chloroform. I have seen more of chloroform than of ether, and I never witnessed any untoward symptom from its use in a practice extending over twenty years; but, as ether is undoubtedly the safer, I think the preference should be given to it when prolonged anæsthesia is required."

The President then called upon Mr. Woodhouse Braine, who said he quite agreed with Mr. Clover's answer to the question; he considered that the use of chloroform was perfectly justifiable in cases where a safer anæsthetic was not applicable, as in prolonged operations. It was true that chloroform occasionally caused fatal results, but the diseases of the mouth which were sufficiently serious to require the use of chloroform might themselves be fatal; such operations were not mere matters of expediency. Mr. Braine then went on to report the death from chloroform of a child at the unusual age of two years and four months, which had occurred a few days previously.

Mr. John Tomes said he had had considerable experience with both chloroform and ether; he had found them both very useful, and had never witnessed any ill effects from either of them; under these circumstances, he did not feel disposed to turn round on old friends and condemn them.

Mr. Bailey thought that Mr. Clover's acknowledged high position as an authority on the use of anæsthetics entitled his opinion to great weight. His own opinion was that gas was the most suitable anæsthetic for dental operations, and that if gas was not available, ether was better than chloroform, but that if prolonged insensibility was required, chloroform must be resorted to, in spite of the fact that death occasionally resulted from its use.

Mr. Henry Barrett said he had not come to the meeting

with any intention of joining in the discussion, but as the President seemed anxious to hear his experience of anæsthetics, he would state it briefly. About the year 1846 dentists began to be called upon to use ether for dental operations; he did so with others, and continued to give ether with safety to his patients and satisfaction to himself for some years. Suddenly it was found that ether was dangerous, and chloroform was had recourse to; chloroform was given for some fifteen years without any trouble or apparent danger, when all at once it was discovered to be more dangerous than ether, and one authority went so far as to say that any one who continued to administer chloroform in spite of the evidence which had been collected against it, ought, in the event of fatal result, to be committed by the coroner on a charge of manslaughter; but, notwithstanding all the strong language which had been indulged in, he personally had never seen any danger; and, although he advocated the utmost care and caution in the use of chloroform, he did not feel disposed to condemn it altogether.

Mr. Jonathan Hutchinson said he could from personal experience testify to the superiority of nitrous oxide gas over other anæsthetics. He would allow any one who had had some experience in the use of the gas to give it to him, but he would only take ether from a thoroughly qualified person, and would not allow any man living to give him chloroform. He had used both ether and chloroform largely; he had lost one patient from chloroform eighteen years ago, and had had many alarming cases; he had seen fatal cases also under the care of others. During the last six years he had almost invariably used ether, and during that time he had not had a single alarming case. He strongly disapproved of some of the complicated inhalers now in use, in which, for the sake of economizing ether, the patient was made to reinhale his own breath, thus taking in a quantity of carbonic acid as well as ether. In the only bad cases connected with ether which he had seen some such apparatus

had been used. He greatly preferred a simple leather mouth-piece, perforated at the top, with a sponge and towel inside; in this way the patient got plenty of air and plenty of ether. There certainly were a few cases in which chloroform was preferable, viz: for old people and very young children. Old people over sixty did not always recover readily from ether narcosis. He had met with several cases in which there had been alarming continuance of insensibility, and in one case death seemed to be partly due to this cause. Chloroform seemed to be less dangerous than ether to old people; and in the case of infants there seemed to be practically no danger at all, while it was most dangerous to young people. At the hospital in Moorfields there used to be on an average a death from chloroform every year, and they were nearly always young people operated upon for strabismus. Chloroform was certainly more convenient in some respects and pleasanter to take than ether; patients who had tried both almost invariably preferred the former; but he thought it criminal to place a patient in danger of losing his life by giving chloroform, when ether had been found to be so much safer.

The President asked Mr. Hutchinson whether he did not think that dental operations presented some peculiar features which entitled them to special consideration?

Mr. Hutchinson said he could not call to mind any points in which dental operations differed materially from those in general surgery; he thought that the opinions he had expressed would apply equally well to them.

Mr. Mills said that his answer to the question would be "Yes, in certain cases." At the same time he did not consider chloroform to be the most suitable anæsthetic for dental operations generally. Nitrous oxide was the best in the majority of cases, and when more prolonged insensibility was required than could be obtained by the use of the gas, he thought the next best plan was to supplement this by ether; gas and ether inhalation was not attended by the danger of syncope, which was so great a cause of anxiety

in giving chloroform. At the same time there were undoubtedly cases in which chloroform was the best agent; it was best for old people, especially if they had any tendency to bronchitis, and it was best for very long operations. Although he had seen more bad cases from chloroform than from either gas or ether, and admitted that it required more care in its administration, still he thought its use was justifiable in certain cases.

Mr. Braine said he wished to call Mr. Hutchinson's attention to some important points in which dental operations differed from those in ordinary surgery in regard to the use of anæsthetics. In the first place, the mouth had to be kept wide open, and had also to be left as free as possible for the use of the operator; it was, therefore, very difficult to regulate the amount of air which the patient inhaled. When the patient was once under the influence of chloroform, insensibility could be kept up by the aid of the nose piece, but to keep a patient under the influence of ether without at the same time hindering the operator was a difficult matter. Then again, ether caused profuse secretion of saliva, and greatly aggravated any hemorrhage which might occur, and the collection of blood and saliva was often an annoyance to the dentist by obscuring the parts. These were some of the objections which might be urged against the use of ether for dental purposes.

Mr. Charles S. Tomes said he would state, as briefly as possible, what his practice was; his opinions might then be readily inferred. He would never again allow a patient to take chloroform or a doctor to give it at his house, nor would he, under any circumstances, advise a patient to take chloroform; but if the patient wished to do so, and he thought that the case justified its use—such cases were very rare—he would insist on the patient taking it in bed at his own house, with all the precautions which were usual before the performance of other surgical operations. Given in this way, there would not only be less risk to the patient but in the event of a fatal accident, no blame could attach

to the dentist. With reference to what has been said as to the unsuitability of ether for dental purposes, he could only say that he had seen several cases of cleft palate successfully operated on under ether at a New York hospital, and that the patients were kept well under its influence without in the least impeding the movements of the surgeon; all danger and trouble from bleeding was obviated by laying the patient on his side, so that the blood ran into the cheek and out at the angle of the mouth. After this evidence of what was possible, he might be pardoned for thinking that the adaptation of ether to dental requirements was merely a question of management.

Mr. Bird thought that the use of any kind of anæsthetic in dental operations might generally be looked upon rather as a luxury than as a necessity. Nitrous oxide was certainly the most suitable for dental practice; even somewhat lengthy operations could be completed by means of successive administrations. He thought that it had been proved that the sitting posture usual in dental operations increased the risk attached to chloroform inhalation; he, therefore, quite agreed with the precautions which Mr. Charles Tomes had suggested.

Mr. Woodhouse said he would adopt Mr. Tomes's plan, and state his usual practice with regard to anæsthetics. He used nitrous oxide in all cases where it could be made available. Formerly, in cases where a number of teeth or stumps had to be removed, he used to give chloroform, and extract all of them at one sitting; now he used the gas, and had it administered a second, third, and, if necessary, a fourth time, on different days, extracting two or three on each occasion. Still, cases did occur in which nitrous oxide was useless, on account of the brief duration of the insensibility, and he considered that, under these circumstances, it was just as justifiable to give chloroform for a dental as for any other surgical operation.

Mr. Underwood said that during the eight years following the introduction of nitrous oxide, chloroform had not

once been given in that hospital. In his private practice, he had during the same period used chloroform only three times. He thought that these facts proved that, though it was impossible to say that the use of chloroform was never justifiable in dental practice, still that the cases in which it was required were very rare. In the great majority of cases nitrous oxide would suffice. He agreed with Mr. Woodhouse that there was no object in extracting a large number of teeth at one sitting. His opinion was that chloroform should be reserved for very exceptional cases, and practically he found that it was very seldom required.

Mr. Pedley said that, after hearing the use of chloroform in dental practice condemned by such high authorities, he could not help feeling somewhat guilty, for he had given it twice during the past two months. And yet, on consideration, he thought what he had done was justifiable; both were cases of impacted wisdom teeth, and their elevation and extraction was a very troublesome business, occupying in each case about a quarter of an hour. Gas was, of course, quite useless, and he personally found it very difficult to keep a patient under the influence of ether with his mouth gagged wide open, as was necessary in such cases as these. It might be a long time before he again met with a similar case; but having so recently experienced the value of chloroform, he did not feel disposed to answer the President's question with an unconditional negative.

Mr. Hunt said that at one time he was in the habit of giving chloroform four or five times a day, but for the last ten years he had used nitrous oxide almost exclusively, and had only had twelve chloroform cases during the whole of that time. He had never seen a death from chloroform, though he had seen several alarming cases; he had seen also one narrow escape from death by nitrous oxide. Ether might be somewhat less dangerous than chloroform, but it was certainly difficult to manage when given for operations in the mouth. His experience was that nitrous oxide would do in the great majority of cases, but that there were

cases in which the use of chloroform was necessary, and he thought that its use under these circumstances was justifiable.

Mr. Sewell said that toward the end of his studentship at St. Mary's Hospital two patients died under chloroform; in both cases the operation which was being performed was a trivial one, and in neither could any disease be found to account for death. These deaths occurring as he was starting in practice, made a deep impression on his mind, and this impression was strengthened by the arguments of Dr. B. W. Richardson, with whom he happened at that time to come in contact. He was in the habit of using gas constantly, and up to that time had not met with a case in which, according to his ideas, the use of chloroform was justifiable. Such a case might occur, and should he ever meet with one he should certainly adopt the precautions which had been suggested by Mr. Charles Tomes.

The President said that all who had spoken had agreed that the use of chloroform in dental operations could not be absolutely forbidden, but that it should be restricted to very exceptional cases. Mr. Charles Tomes had added some very practical suggestions; he said it should only be given at the patient's own house and with the patient in a recumbent position. His own opinion was that a previous consultation with the medical attendant of the patient was also desirable. He proposed that the Society should adopt these suggestions in the form of a resolution, thus: "That it is the opinion of the Society that the use of chloroform in dental practice should be restricted to very exceptional cases, that it should only be given at the patient's own house and with the patient in a recumbent position, and that whenever circumstances will admit of it a previous consultation with a qualified medical practitioner is highly desirable."

Mr. Dennant thought that, with all deference to the President, the adoption of any such resolution was very undesirable. In London it would be easy enough to comply

with its conditions; any of the members present could at any time obtain the assistance of experts thoroughly skilled in the use of the anæsthetic which might be deemed most suitable for the case. But dentists residing in the country had only country surgeons to depend upon, and they were obliged to conform to their usages. Gas and ether had been for some years before the profession, but their use was not yet general throughout the country; in many parts chloroform was still the only anæsthetic with which the medical practitioner was familiar. It would not be fair to pass the resolution in the name of the Society. The meeting was not a truly representative one; it was composed almost entirely of men residing in or near London, while the bulk of the members were scattered throughout the length and breadth of the kingdom, and, as he had shown, these would be the people who would be chiefly affected by the resolution.

Mr. John Tomes could not see why the responsibility of answering this question should be thrust upon the dental profession only; it was one for the whole medical profession to decide, and its terms should not be is chloroform justifiable in dental operations, but in minor surgical operations generally. The question had been fairly discussed, and he thought they should be contented with the general agreement of opinion which had been expressed.

Mr. Walker said he agreed with Mr. Braine and other speakers, that chloroform was preferable to ether for dental operations. He had given ether a fair trial, but the result had not been satisfactory. He was in the habit of using chloroform occasionally, but he always placed the patient in the recumbent position, unloosed every band, and generally observed the same precautions as if the operation were a capital one.

Mr. Charles Tomes thought that the passing of a resolution without notice was an unusual termination to a scientific discussion, and might possibly become a bad precedent. He doubted whether the majority of the members present

had given sufficient attention to the question, or had had sufficient evidence before them to enable them to decide it as carefully as its importance deserved; he would advise that the resolution be not passed.

The President said he should be sorry to urge the Society to come to a definite conclusion against their inclinations. No doubt practitioners in London and other large towns were more favorably situated as regarded the facility of obtaining advice and assistance than were their brethren in the country, and it was possible that an unfair use might occasionally be made of the resolution by the legal profession. He would not, therefore, press it. It was the less necessary since all the speakers had agreed that though the use of chloroform might be occasionally justifiable, it was very undesirable to use it in any case where the services of other and safer anæsthetics could be made available, and he felt sure that the strong conviction of the danger and responsibility attached to the use of chloroform which had been expressed by some of the speakers would have great influence with the profession.—*British Journal of Dental Science.*

ARTICLE III.

Valedictory Address.

BY REV. ALEX. W. WEDDELL, D. D., OF RICHMOND, VA.

Delivered at the 39th Annual Commencement of the Baltimore College of Dental Surgery, March 6th, 1879.

The *Valedictorian*, as one of the *actors* in every *commencement drama*, has suggested to my mind many, and some very grave problems. *For example: Whence* did the idea of a *Valedictorian* originate? *Having been originated*, doth aught in the maxims of any known science demand that the office of *Valedictorian* be continued? *If continued*, should we, as disciples of Ruskin, class the *Valedictorian* as among the *useful* or as among the *ornamental*? Such, and similar problems, as demanding solution, have been forced upon me through the agency of a bitter personal experience. As I recall a certain commencement day, less

than one hundred years ago ; and as I remember the impatience of the graduates to receive their diplomas, and the impatience of fair auditors to lavish upon those graduates their floral tribute ; and as I remember the venerable "man of letters" who for two solid hours taxed youthful endurance with the "pitiless peltings" of what seemed an unending advice, you will at once understand the undisguised horror with which for years I have regarded the office of Valedictorian. Indeed, a Constitutional Amendment, (say if you please, No. 16,) forever forbidding its exercises on American soil, would challenge my most cordial support.

Still, young gentlemen, and because your Faculty are evident strangers to the spirit that inspired Henry Berg when he organized his Society for the Prevention of Cruelty to Animals, I am here to night. Like the captive of old, bound to the Roman chariot wheel, I shall try and act my part in the night's drama. Still my own bitter personal experience shall prove a check to my words, and within less than thirty minutes,—Tewekesberry time,—I pledge you that the work of your Valedictorian shall have finished, and you shall have heard "what I know about Dental Science."

The course of study in the Baltimore College of Dental Surgery, prescribed as a pre-requisite for graduation, indicates, on the part of its Faculty, a thorough sympathy with the demands of this age. In every department, however humble, however exalted, the hitherto empty "upper rooms" are being entered ; and from those now occupied "upper rooms" the world is being taught and the world is being impressed. Pretension can no longer deceive, profession can no longer delude, the "seeming to be" can no longer defraud. The standard of learning has advanced ; and that higher standard has widened itself into every channel of thought and of activity. Humbuggery is no longer classed among "the fittest," and therefore, cannot know "survival." Ignorance is no longer a veiled prophetess, and, therefore, cannot escape detection. *Culture*,—albeit simple in its garb, yet solid, broad, studious, thoughtful,

energizing the muscles and giving bent to the mind,—*culture* is what this age is seeking and is what this age will have. Aye, and what this age demands, your Faculty, in their particular sphere, has sought to supply. The course of study, as here prescribed, is broad and comprehensive. No "pent up Utica" limits the field of investigation. Not the Dental Art only, but also the Dental Science is studied. Not the Dental Science only, but also those kindred branches and kindred departments of learning which may explain and enlighten it, are investigated. Within the curriculum, therefore, is included of course Dental Science, Surgery and Therapeutics, but more; Physiology, Pathology, Chemistry, Materia Medica, Anatomy and Metallurgy. Such a curriculum indicates *breadth*. It gives a clear and decisive answer to the deep questionings of this nineteenth century. It indicates that *here*, in this beautiful city of our dear Southland, we have a College, the creature of southern scholarship, which, in its particular sphere, measures up to the minutest demands of this exacting age. The course of study is indeed of a character so complete and so thorough, as to excite surprise, baffle criticism, and challenge confidence.

Presently, young gentlemen, and the Dean of your Faculty will place in your hands a Diploma, which, as we interpret it, means much to *yourselves* and much to *the world*.

The Diploma means much to *yourselves*. It says you have been diligent and devoted as students. It says that you have successfully mastered the *elements* of that *central*, and those *kindred* sciences, so wisely mapped out in the curriculum of study which is here prescribed. Such testimony, if I have interpreted its meaning aright, is grateful to the modest and conscientious. Others, older, wiser, and more experienced, even the preceptors who, through daily contact, have grown familiar with your acquirements, *testify*. Hence, and yet in no vain, arrogant, or supercilious sense, it affords you solid ground for self-confidence. At least your foundations have been laid. At least you have the right to

begin your superstructure. *Assurance*, wrought by such conviction, and *confidence*, the inspiration of such intelligent praise, tends to develop manhood. You are building upon *something* that is real. The elements of knowledge that have been mastered, furnish you a *granite-base* upon which to plant the sculptured ideal that your life may chisel into form. Just as the noble young artist, when gazing upon Raphael's master-piece, modestly but earnestly exclaimed; "I, too, am a painter,"—so to each one of you belongs *this privilege*: to look up into the face of the most brilliant among your profession and say, "to-night we are one in kind,—future years shall find us equal in degree."

But then again, the Diploma means much to *the world*. It emanates from the Baltimore College of Dental Surgery. Upon the history of this College we need not dwell. Its origin dates back to a period almost contemporaneous with the time when science first recognized Dentistry as an essential factor in the surgical arena. It ranks as the oldest, as it was for long years the only Dental Institution in the world, to which our ingenious and aspiring youth might resort in quest of dental knowledge. Its Alumni, now well nigh 800 in number, are to be found scattered through the earth, and wherever Christian civilization, in the track of Christian Missionaries, has opened a highway for generous aspirants. Its Faculty, names not unknown to fame, have so demeaned under the responsibilities of their "great office" as to arrest the public eye and command the public confidence. Hence, and I repeat it; yonder parchment, bearing a seal so venerable, linking you with alumni so worthy, and burdened with a certificate so imposing, means very much to *the world*. It means, or else this Faculty should be impeached for "high crimes" against society; it means that you are *competent*. It means that the years of your matriculation have not been spent in idleness, but in honest, earnest study. It means that, albeit without great experience, you have mastered the fundamental principles of your calling. It means that although not yet experts, you

are in possession of the true protoplasm out of which experts are evolved. Hence the world, in quest of prevention or of cure, and yielding to testimony so imposing, stands ready to welcome your coming and to confide itself to your skill.

Presently, young gentlemen, and the Dean of this College will place in your hands a Diploma of Graduation. Its delivery on his part, and its reception on yours, launches you upon a new and untried sea. Your name is erased from the catalogue of matriculates and written among the honored Alumni. The drill has ended and the battle must begin. Life, with its trials, its struggles, its victory, greets your advancing footsteps. The future, with none other guidance than your own manhood and with none other staff than your own resolute spirit, invites your activities. That life and that future, in their character and in their outcome, are in your own custody; to be fashioned according to your own will, to be developed according to your own determination. The destinies of men, and their success in life, is not the chance-waif which so many imagine. Here, as elsewhere, the connecting link between cause and effect is close and intimate. Here, as in mechanics, a certain force-applied will lift a given body to a certain altitude. *Solid worth*, centering itself upon a high aim, and giving to that high aim all the energies of a consecrated manhood, will rise to its true level and enjoy the rewards of a rightful triumph. I believe in the supremacy of *merit*. I believe in ultimate ascendancy of *worth*. I believe in the irrepressible prowess that centers in a *union of brain and muscle*. I believe that what the genius of Bulwer carved upon the tomb of Richelieu, is true: "In the lexicon of youth, which the fates reserve for a bright manhood, there is no such word as fail." Hence, and because I believe these things, I would to-night protest in the Name of the *coy goddess of fortune*; I would protest in the Name of the "*ill winds*" against the self-complacent case with which mankind ascribe to *them* the failures which are due to their own indolence and worthlessness—perchance to their own vice and sin. Hence,

and because I believe these things; the inherent potency of merit, and the commanding imperialism of worth, and the certain triumph which waits upon the wedlock of brain and muscle; I would bid these young gentlemen go forth to their life-battle in the assured confidence that if loyal to virtue and to truth, bending mind and heart to the ascent, their success will keep pace with their efforts and prove commensurate with their capacities. Beyond this no real man will aspire. To be recognized at what we are worth, and to be rewarded in exact accordance with our merits, is all that the ambition, which is honest and true, can demand.

The temptation to convert these words of Valediction into words of "counsel and advice" is very strong. But then, and because I remember the dictum of John Milton, "Bad advice may slay not only a life, but an immortality," I forbear. And yet, friends, you will pardon me if I linger but for a moment to record a single protest and to enter a single plea.

The protest is this: Do not degrade your life-calling into a *mere trade*. Some men affix D. D. S. to a name on their business cards and then go out into the world with none other inspiration than this trade-idea. I knew of one man, typical of this class, when I lived in the dear old Valley of Virginia. He was a little man, with little mind, little heart, and a very little soul. He was without culture, without manners, without principle. He lived no where in particular. The rather, He was a veritable Dental Tramp. He roamed year in and year out along the country road, passing from one neighborhood into another, all the while intent upon a patient and a prey. He was "on the make," by fair means, or by foul, in sums large or in sums small. His talents were gladly expended in return for supper and a night's lodging. His mastery of the English language was seen in the eloquence with which he detracted from the skill of the resident practitioners as well as in the indignation with which he denounced their excessive and

exorbitant charges. His skill; so the rustics who lived in the trail of his devastations whispered: his skill was betrayed in the creating of cavities that there might be cavities to fill, and in extracting the natural that there might be the artificial to supply. In a word: Bret Hart's lines, *mutatæ mutandis*, are applicable and descriptive:

"For ways that are dark,
And tricks that are vain,
The Heathen Chinese is peculiar."

Now, friends, as we smile at this man's littleness and meanness as thus outlined, let us not be too hasty in our conclusions. There are two well defined and sharply cut sides to our American life. On the one side, healthy and vigorous, we recognize a vast preponderance of what may be reckoned great, generous, true, and manly. On the other side, and of equal vitality, we recognize a mighty aggregation of what must be reckoned small, selfish, false, and base. Our American soil, as we find it in the latter half of this nineteenth century, is the Rebecca's womb wherein these two antagonistic civilizations are struggling for the conquest. Out of *the one*, and we cannot mistake which one, (like Minerva for the head of Jupiter,) the Dental Tramp springs. And yet if the selfish and materialistic civilization be founded on truth; if self be the supreme inspiration, if selfish interest be rightly the ultimate aim, the Dental Tramp is in the line of orthodox advancement. Allow him, therefore, ample room for his energies. Let him fly as a vulture; let him disregard every canon in the code of Dental ethics, let him tear down, that he may build upon, a brother's reputation; let him concentrate all his foul cunning upon the "ways and means," wherein to harvest gain; aye, let him ply, *ad nauseam*, his low, sordid, and miserable brade. Such a mere trader will doubtless win a *so-called success*. But I protest, young gentlemen, it is a success which the truly great could never covet, it calls to a life too sordid, it invites to the use of means too degrading, it offers a crown too foul, to satisfy the demands of a noble, generous, and manly soul.

The plea I would enter is this: regard your calling as among the noblest and the most liberal of *the professions*. Such an estimate of your calling, so far forth as it is based upon intelligent and earnest convictions, will determine the character of your life-work. But then, and as a condition precedent to any such exalted estimate, there must be wrought into your very soul *a deep and tender sympathy* for your race and kind. Humanity is a great sufferer; the ills to which human flesh is heir, have not yet been catalogued. *Pain*, under manifold manifestations, and with ten thousand diversified lackeys to inflict its scourge, is wrecking human bodies, murdering sleep, undermining health, and destroying life. Into a world, therefore, thus shadowed, you enter to-night. You go as accredited agents. You go as trained and skillful workers. Your mission is, first and above else, to *prevent*, but where prevention is impossible, then to assuage, arrest, remove the suffering that pertains to your particular sphere. Success in a ministry so Christ-like demands somewhat the spirit that embodied itself in the Christ-life. The Divine Physician, as he lingered for three years amid the wards of this vast Hospital which sin has filled with disease, was *sympathy incarnate*. Such in kind, if not in degree, should be the hidden inspiration of every life, that would intrude itself into ranks-professional. A deep and tender sympathy with your kind, young gentlemen, will lift you above the degradations of a mere trafficker and fill you with conscious dignity as you go forth to the discharge of your responsible functions. You are standing upon an exalted eminence, and you are breathing a divine atmosphere the moment your oneness with humanity becomes articulate in the creed of Terence: "I am a man, and naught that relates to man is alien to me." Your professional pride, saturated with generous sympathies, will make you *conscientious*. The patient, as he crosses the threshold of your office, is no longer a victim to be fleeced, but a brother confiding to your honor and skill. The relationship determines your conduct.

With care, and with an eye single to your patient's good, nothing invented, nothing neglected, you will center upon the case the results of your best judgment and of your maturest investigations. Your professional-pride, saturated with generous sympathies, will constrain you to be *students*. The woes of humanity, like the wounds of Cæsar, are voiced in prayer for help. To such prayers your heart lends a responsive ear. The deeper your insight into the evil threatened and into the evil existing, the greater will be your determination to toil after the best preventive and the most certain cure. Your professional-pride, saturated with generous sympathies, will render you *liberal*. Whatsoever conscientious study may develop in the way of remedial agencies, and whatsoever an inventive genius may discover in the line of remedial helps, you will reckon as belonging to humanity. No patent, or copyright privilege, no secret monopolies, no financial considerations, will tighten your grasp upon the remedial blessings your genius hath won. The rather,—you will be *liberal*,—counting it more blessed to give than to receive, aye, and like the fair moon, giving back to earth the light garnered from the great sun of truth. Such a life, a noble professional-pride blended with genuine human sympathies, (and because as Mrs. Browning has it, "To love best shall still be to reign unsurpassed,") such a life,—I say,—can never know the shame of failure. It folds within itself the germs of all that can make existence pleasurable; it appeases conscience, satisfies every manly instinct, and crowns the brotherhood with blessings that our own hands have wrought.

Nor is the life, thus faintly outlined,—a life free from all trade-debasement and yet radiant with high professional impulse,—an empty ideal. Such lives have been lived, and albeit like rare meteors their presence has brightened the darkness of human nature. In the necrological records of this very College are written names which reveal the noble inspiration and the high aim which may consecrate the life of man. Not to discriminate, but simply because

a strong personal friendship forces the allusion; let me hope that the spirit of Henry Reginald Noel, may descend upon, and forever abide with, this College, its Faculty, its Alumni, and its students. His life was beautiful in its manly instincts and graceful in its solid developments. Entering life with the highest honors that Virginia's great University could confer upon her son, he selected Baltimore as his home, and here he poised his lance. His natural abilities, precocious development, and extensive culture, were promptly recognized. His rise was rapid, and his life-work,—albeit arrested by an early death,—was not without its trophies. Yet, young gentleman,—as to-night I recall the man, my friend, memory is content to linger simply upon mere *the spirit*, so pure, so noble, so exalted, that inspired his life. And that spirit, as I would interpret its character to you, is this: "He loved his race and he labored for his kind."

ARTICLE IV.*Class Address.*

BY FRANK B. PERRY, OF VIRGINIA.

Delivered at the 39th Annual Commencement of the Baltimore College of Dental Surgery, March 6th 1870.

To say that I am gratified at this mark of appreciation by my class-mates, in selecting me as their speaker, to deliver an address on such an occasion as this, is both natural and true. Hence the memory of this hour will ever linger amongst the brightest recollections of my college days. But however pleasant and natural it may be for one to surrender himself amid such scenes as these to delightful fantasies of fond association and sentiment; yet the profound responsibility which a kindness and partiality, perhaps too indulgent and generous, has imposed upon me, suggests that the moment has its *duties* as well as its pleasures, and that its opportunity must not be permitted to pass away unimproved.

In all the vast range of topics which literature and the arts and sciences, philosophy, religion and politics can present, what subject can be more appropriate and suitable to this occasion or more applicable to us all, whether as students at college or busy gleaners in the field of life, than that suggested by our *hope* and inspiration and the achievements of man in every age and country. For these have been the themes of poets and orators from the time when Homer sang of gods and Heroes, who combatted for love and honor, down through age and every change and phase of civilization, and has ever proved the *inspiration* that has awakened the human mind and stirred the hearts of man to glorious deeds and deathless fame.

These themes, though old, are like the ancient monuments of Egypt, which still remain the examination and admiration and wonder of the world, and whose secrets have been oft discussed, and whose thrilling story has been thrice told, and of which we never tire nor grow weary. They still excite and interest, and still maintain their grandeur and renown. And as we never tire nor grow weary of listening to the oft repeated story of Greek and Roman triumphs, and of perusing the interesting history of their greatness, splendor and power, so we like to hear our favorite topic discussed and dwelt upon. Indeed no subject is calculated to excite so much interest in us as our own *hopes* and aspirations which are founded to so great an extent upon the achievements of others.

And as in the language of Patrick Henry, we have no light to guide our feet but the light of experience, and no way of judging of the future but by the past, so all experience and observation teach us that our success in life depends upon the devotion of ourselves to a single *profession, object or purpose*. For the range of knowledge has become so wide and extended that to become proficient in all things has become an impossibility, if indeed it ever was possible. He whose thoughtful consideration of man and his characteristics has made his "Essay" famous, and

secured the proud honor which are so justly his—has said :

“Our science only will *one* genius fit,
So wide is art; so narrow human wit.”

How many noble youths of well trained and highly cultured minds, good hearts and noble aspirations, have passed through life ever changing from one thing to another, wasting their talents upon a multiplicity of pursuits and never rising above the common class of mankind.

How many of the most brilliant *stars* of our colleges and universities soon sink into obscurity and disappear among the common class of humanity, owing to a want of energy and *singleness of purpose*. Men, who, if they had have arrived at something *great* and definite, might have risen to distinction and honor in some single pursuit or profession, or have “swayed the rod of Empire.” Therefore if we waste our talents and energy in vainly trying every new scheme that is suggested, or in following every year’s factions that crosses our path, we can not expect to succeed in any of the pursuits of life.

History and biography tell us upon almost every page of the fatal consequence of such a *short-sighted, fickle* and senseless policy.

Coleridge, who possessed a mind second to none of his cotemporaries, died without leaving a complete production of his wonderful talents; it is said that he left over 400 treatise on Metaphysics and divinity but not one of them completed. Dr. Quincy Chatterton and Chisolm with all their talents, never left one elaborate and complete work worthy of their rare gifts and fine powers.

And so with thousands of others to whom reference might be made if time would permit; these however will suffice to illustrate the principles for which I contend.

But do not imagine that for the purpose of pursuing our object, all other knowledge should be neglected or forgotten. For it is only claimed, that you shall make all others subordinate to your one great object, “the aim of

life." Do not despise other attainments, but let imminent success in the chosen profession in pursuit be your sole *end*, *aim* and *object*.

Why should we claim inability or imperfection when history and biography every where tells that many apparent impediments and obstacles may be overcome or surmounted. Of those who thus conquered nature herself, was Demosthenes, whose standard of greatness was unmeasurable—infinite. His *aim* was immortality. To reach this he overcame physical disabilities, though most discouraging and harrassing. No task was so difficult, no enterprise so arduous but that his aspiring genius found a way to overcome it, and now

" His name, a great example stands to show,
How strangely high endeavors may be blest."

Cicero struggled to be equal to his distinguished teacher, and after infinite *labor and toil he too* achieved his triumph over difficulties and adversity, and won a deathless name.

Napoleon Bonaparte, who in the language of Philip, the great Irish Orator, was a stranger by birth and a scholar by charity, with no friend but his sword and no fortune but his talents, rushed into the line where *rank*, fortune and genius had arrayed themselves, and competition fled as from the glance of destiny.

From a poor orphan of foreign birth, by the power of his talents, his indomitable energy and perseverance, and unconquerable determination, he became the greatest general and monarch that the world probably ever saw or knew.

And *why is it* thus? With few exceptions the eminent and distinguished orators, statesmen, warriors, professional men, artisans, inventors, and discoverers in every age and country, sprang from the comparatively humble walks of life; often indeed from the very poorest class of beings. Simply because the labor and application incident and necessary to success is so great that the most wealthy and favorite of our race are not willing to begin at the lower

round of the ladder and endure the trial and privation absolutely necessary to reach the top. Hence the lower ranks of every profession are crowded and clogged. But, my young friends and class-mates, there is always an abundance of room at the top. The upper ranks are never crowded; the room there is ample and the rich reward of success so great as to elicit all our efforts, excite all our energies and inspire us with the most laudable ambition. And it is a matter of especial gratification that our lot has been cast in the grandest age and country the world ever saw. The war cloud that once hung so remorselessly and destructively over us has happily passed away and heavenly peace now, spreads her golden wings over us from the Lakes to the Gulf, and from Ocean to Ocean, diffusing her rich blessings all over our happy, *glorious* native land. Sectional animosities are dying away, and we are brother again from Maine to Georgia and the far off Pacific shores, where our rivers roll down their golden sands. Our harvests are bounteous, our currency unsurpassed, our commerce whitens every sea of the known world, our manufactures are without a successful rival, and prosperity is fast returning and blessing every portion of our great and grand republic. Hence wealth and peace and sparkling beauty stand invitingly before us. And therefore if we do not win it will be our fault, with no one to blame but ourselves. We have here contracted a friendship and intimacy which has bound us together, that to the latest day of our lives we will recall,

“For there is a skill that binds the past,
Which naught but death alone can sever;
And memory with retentive grasp,
Doth call it to the mind forever.”

Gentlemen of the Faculty.—We acknowledge your ability, and your constant readiness and desire to instruct us. Never can we forget the kindness and forbearance which you ever manifested towards us in the whole course of our difficult and arduous studies. Therefore it affords us infinite pleasure to express to you our appreciation of

your efforts in our behalf, and our gratitude for your watchful care, your invaluable instruction, your constant efforts to infuse into our minds the science and mysteries of Dental Surgery, and impress us with the importance of our duties and point out the road to success in this noble and humane profession.

To you citizens of Baltimore, we extend our grateful acknowledgements for the kindness and courtesy which so many of you have shown us, during our brief sojourn in your beautiful and flourishing city—thus maintaining your high reputation for those noble virtues, hospitality, affability and good will, and leaving impressions upon our minds that time will never obliterate, and exciting sentiments of friendship in our hearts that will ever cause us to rejoice in your welfare and happiness and the progress of your city in wealth and commerce.

May the star of her destiny never grow dim, her wealth and beauty increase year by year, and her commerce extend until the sails of her ships whiten every sea of the known world, and her railroads penetrate the remotest regions of the great continent.

ARTICLE V.

Compound Hare-Lip.

Proceedings of the New York Academy of Medicine.

Dr. James L. Little presented three cases of compound hare-lip with cleft palate. The patients were three brothers, aged 22, 18, and 9 years. The father was born in England, the mother was a native of the United States. No deformity could be traced upon either side. The family consisted of nine children, who were born as follows: First, a boy, with compound hare-lip and cleft palate. Second, a girl, without deformity. Third, a boy, with compound hare-lip and cleft palate. Fourth and fifth, two girls without deformity. Sixth, a boy, with compound hare-lip and cleft

palate. Seventh and eighth, two girls without deformity. Ninth, a boy, who lived only a few hours, but was born with compound hare-lip and cleft palate. Four boys and five girls; all the boys born with deformity, and all the girls without deformity.

The only external deformity in the family, aside from the hare-lip, was absence of the ring-finger, and a peculiar twisting of the little finger, on the right hand of John Bocock, which gave it somewhat the appearance of a thumb. The index and middle fingers were also larger and longer than corresponding fingers upon the left hand.

On Wm. Bocock, æt. 22 years, four operations were performed. His lip before the operation had a wide cleft, the intermaxillary bone projected and held one incisor tooth, and there was fissure of the hard palate. The first operation was to close the fissure in the hard palate, and was only partially successful; the soft palate separated entirely, and the covering for the fissure in the hard palate almost entirely.

The second operation consisted in removing the projecting portion of the intermaxillary bone, and forming a septum for the nose with the integument by which it was covered. The operation was successful. Subsequently, an operation was performed upon the double hare-lip. That operation was followed by an attack of erysipelas, and was only partially successful.

Lastly, what is known as Nelaton's operation was performed, and the result was very satisfactory.

On John Bocock, æt. 9 years, two operations were performed. The intermaxillary bone projected and carried two incisor teeth. A septum was formed for the nose in the same manner as in the first case, and the operation was successful. Subsequently an operation was performed upon the double hare-lip, and the result was very satisfactory.

Chas. Bocock, æt. 18 years, had a very wide cleft in the mouth, but the projection of the intermaxillary bone was not so prominent as in either of the other cases. Dr. Little

proposed to operate after the same general plan by which he had been guided in his operations upon the other patients.

Dr. Post exhibited a *daguerreotype* of a patient thirteen years old, whom he had operated for the correction of a deformity that equalled the worst features of any case which Dr. Little had presented. The result was such that no indentation was left in the margin of the lip. He thought it very important to make the incisions so that when the edges were brought together there would be considerable pouting at the junction on the margin of the lip. There was no danger of bringing too much material to that point.

Again, operations performed upon adults or half-grown children were usually followed by better results than in small children. The parts could be brought into more perfect apposition, etc., still, it was not desirable to allow children to grow up with such a deformity. In cases in which there was fissure in the bony structure, early closure of the fissure in the lip exercised a certain amount of pressure, and diminished the breadth of the cleft in the hard palate.

Dr. Wm. T. White referred to a family in which three of the children were born with hare-lip and fissure of the palate. All died within a few days after birth.

Dr. Post referred to a family reported by Dr. Buck, in which the mother and five or six children had hare-lip.

Dr. Garrish referred to four families in which there were three children in each family who had hare-lip, either compound or simple.

Dr. Weiner referred to a family in which two children born of the first wife had compound hare-lip, but in none of the children born of the second wife did the deformity appear.

He thought it was next to impossible to secure such perfect coaption of the parts at the first operation as could entirely correct the deformity. He had never seen a case

in young children in which it was not necessary, after the child reached ten or twelve years of age, to operate to remedy the indentation in the margin of the lip.

With reference to closing the fissure in the hard palate, he thought an operation should be avoided, because the dentists had succeeded so well in making an artificial roof of the month, and at the same time the operation was quite commonly unsuccessful.

Dr. Little thought if the operation could be performed it was usually successful, and believed it to be bad advice to send such patients to the dentists. There were comparatively few patients who could bear the expense of the artificial appliance. In order to secure the best results so far as indentation in the margin of the lip was concerned, he thought it very important to secure perfect coaptation at the *upper* edge of the vermilion border.

Dr. Weiner referred to a case in which an opening in the hard palate about three fourths of an inch in diameter was successfully closed by a button made of gutta-percha. The girl had learned to mould one herself, and made a new button as often as the old one became hard and gave her any discomfort. An artificial appliance was thus afforded which answered all practical purposes, and the expense was a mere trifle.

Dr. Post thought it well confirmed that a properly formed artificial palate was more useful than a united velum, and was preferable if the patient could the expense.—*Medical Record*.

EDITORIAL, ETC.

With this number closes the twelfth volume of the third series of this Journal. It is hoped and expected that its future will be encouraging, and that its friends will see to it that more original matter of a truly original character comes to its pages

than heretofore. The premium offered by the Publishers makes it lower in price than the lowest, and the Editors hope to give it in the future more of diligent and discriminating attention than heretofore. The common phrase that a journal is published to "supply a *felt want*," is often quoted in defence of the origination of a new periodical; it should apply with force to this, the only one published south of Philadelphia, and indeed the only one in the South, where reside many of the foremost men of the profession, and from which for many years came the chief impulses which forwarded the state of things that made dentistry a liberal profession.

Those managing the AMERICAN JOURNAL OF DENTAL SCIENCE again appeal to the profession throughout the country to put the result of their observations on paper, and let the world see them. Notoriously, some of the best men never write. This is all wrong; charity for their fellows, and interest in a profession to which the best energies of life are given should prompt the recording of facts and, if you please, the generalization therefrom of theories.

Some notable things have transpired during the past year. The "New Departure" theories, concerning plastic, and especially concerning the use of amalgam fillings, are evidently moulding professional opinions and the opinions of our patients also. That more amalgam is used, is part due to the knowledge of its value on the part of the unprofessional public. Perhaps this is well. Certainly in these times when financial difficulties make the insertion of the most costly gold fillings an impossibility for the mass of the patients who call for treatment, and when a large fee means the loss of a valuable organ, it is well that the more scientific side of the subject is being examined into, and the question at least lifted out of the domain of empiricism.

The consolidation of the two Dental Colleges, the Maryland Dental College with the old Baltimore College of Dental Surgery, is an event which seems to have been demanded by the times, and is heralded as a sign of greater unity, and, as a consequence, greater premised good. Whether the colleges are "making too many dentists," is a question for debate in associations, but the most casual observer must see that the wholesale multiplication

of these institutions can only result in harm; weakening the influence of all and making ungenerous and unfriendly competition a necessary result. It was earnestly felt by the friends of both institutions that some move should be made which would condense into one focus the influence divided in the South between two colleges. The friends of both seem pleased, and the promise is made that the future shall show that those who desire a standard of efficiency on the part of graduates equal to the demands of the times shall not be disappointed.

Let all then, only looking back on the past and on the jarrings which were painful, gather useful lessons, and with determinations for the most zealous efforts for the future, try to help advance the cause of dental education, knowing that ignorance is the great obstacle in the way of the progress of any profession.

H.

OBITUARY.

[*Advance Sheets kindly furnished by Dr. J. W. White, Editor of the DENTAL COSMOS.*]

Prof. John Hugh McQuillen, M. D., D. D. S.—Suddenly, on March 3, 1879, Dr. John H. McQuillen, in the fifty-fourth year of his age.

Dr. McQuillen was born in Philadelphia, February 12, 1826. He was the son of Captain Hugh McQuillen, who served under Decatur during the war of 1812. The ancestors of his mother, Martha Scattergood, came to America with William Penn. He received his early education in the Friends' schools in Philadelphia, and at the age of sixteen entered as clerk in an importing house with the purpose of devoting himself to commercial pursuits. His tastes, however, inclined him to medicine, and after attaining his majority he commenced its study in the Jefferson Medical College, from which he graduated in 1852. Meantime he was also studying dentistry, and in 1853 he received the hon-

orary degree of D. D. S. at the first commencement of the Philadelphia College of Dental Surgery. In 1857 he was elected to the chair of operative dentistry and dental physiology in the Pennsylvania College of Dental Surgery, holding that position for one year, and relinquishing it to take the chair of general anatomy and physiology, which he resigned in 1862. In 1863, principally through the efforts of Dr. McQuillen, a charter was obtained for the Philadelphia Dental College, of which institution he was made dean and professor of physiology, retaining both positions until his death. In 1859 the publication of the *Dental Cosmos* was commenced, Dr. McQuillen becoming one of its editors, which relation was continued until his retirement in 1871.

Dr. McQuillen has been a frequent contributor to the literature of the profession from his first connection with it, and has held important positions in various dental societies, including the presidency of the American Dental Association, of the Pennsylvania State Dental Society, and of the Odontographic Society of Pennsylvania.

As an operator Dr. McQuillen was recognized as possessing more than average skill, supplemented by an earnestness and conscientiousness which were a guarantee of faithful service.

As a teacher he was enthusiastic and ambitious, laboring to the best of his ability to prepare those whom he instructed for the intelligent and successful practice of their vocation. Hundreds of the alumni of the institutions in which he taught will hear of his decease with sincere sorrow.

Dr. McQuillen was by nature an organizer. To his organizing faculty, as well as to his zeal, energy, and tact, the success of the Philadelphia Dental College is largely due, and it was these qualities which caused him to be recognized as a power in the profession at large. If ever any man was consecrated to the chosen work of his life, John H. McQuillen was. He devoted to the original organization of the American Dental Association, to its development and to the general educational interests of the dental profession, the best efforts of his life. Other men may be found of greater natural gifts, of larger attainments, and of more brilliancy, but none who have contributed more freely, more constantly, more unselfishly to the general good. And

though he possessed personal gifts and graces which won the respect and esteem of a large circle of friends, professional and otherwise, who will hold his memory in affectionate remembrance; though he was courteous, genial, and kindly in spirit and manner; though he was hospitable to a fault, it was not to these qualities chiefly that he owed his position and his usefulness in the profession, but to a life devoted to its improvement and elevation. Considering his energy, his industry, his unselfishness, the worthiness of his aims, the work he has done, the influence of his example as an advocate of educational progress and reform in his profession,—an influence which will be felt for good through many years to come,—the sudden termination of his earthly career is a calamity, not alone to his family and personal friends, not alone to the institution of which he was the recognized head, but to the practitioners of dentistry wherever located, and especially to American dentists. His place will be difficult to fill; perhaps not in this generation will it be in all respects completely filled.

The sad side of the history is that he allowed his interest in the school with which he was associated, and the general interests of the profession as an organized body, to make exhausting and damaging drafts upon him, involving the sacrifice of time, money, practice, ease, and pleasure. Had he brought the same ability, the same industry, the same energy, the same concentration, the same persistence to the accumulation of means by the practice of his profession, he might have left his family handsomely provided for. That he did not do so not only constitutes a cause of regret for their sakes, but calls for a substantial recognition of his valuable labors and services in the advancement of the dental profession in usefulness, self-respect, and public regard, and in strengthening fraternal courtesy and co-operation among its members.

Dr. McQuillen leaves a widow and four children, one of whom, Dr. Daniel Neall McQuillen, a graduate of the Philadelphia Dental College, has but recently engaged in practice. Mrs. McQuillen will receive the hearty sympathy of hundreds in the profession who have shared the hospitality of her home, and who will remember with what interest and kindness she received and ministered to her husband's friends.

The resolutions appended show the estimate in which Dr. McQuillen was held in his own city, and by his colleagues and pupils.

At a meeting of the dental profession, held at the Philadelphia Dental College, March 5, called with reference to the decease of Dr. John H. McQuillen, the following preamble and resolutions were adopted by a rising vote:

Whereas, Dr. J. H. McQuillen has been suddenly removed from among us by death; it becomes our privilege as well as our sad duty to make record of the event, and to express our estimate of his worth and our sense of the loss thus sustained; therefore:

Resolved, That Dr. McQuillen has been for many years so identified with the interests of the dental profession, and so earnest in their advancement, so indefatigable in his efforts in behalf of the elevation of the standard of education, of graduation, and of practice, that his death leaves no one man who in all respects fills the place thus made vacant.

That while as an operator he was gifted with more than ordinary ability; while as a teacher he was conscientious and earnest, his labors in the organization of the profession and in promoting its educational interests gave him marked pre-eminence.

That, more ready to serve than to be served, more solicitous for the advancement of the profession with which he was identified than for personal advantage, he, indeed too often, ignored the latter in the effort to promote the former.

That a life devoted to the self-sacrificing service of his profession, and to the promotion of all plans having for their object its improvement, made him an example of concentration, of industry, and of persistent effort worthy of imitation.

That, while thus recording our appreciation of his professional attainments and labors, we desire also to express our affectionate remembrance of him as a genial, generous, sympathetic gentleman, and to tender to his bereaved family the assurance of our profound sympathy.

At a special meeting of the Faculty of the Philadelphia Dental College, held on Wednesday, March 5, 1879, the following preamble and resolutions were offered, and, after appropriate remarks by members of the Faculty, were adopted:

Whereas, The sad intelligence has reached us of the sudden death of Dr. John H. McQuillen, practically the founder of this institution, and its Dean since its establishment, sixteen years ago; and,

Whereas, It is fitting that we should place on record a testimonial of our high appreciation of his ability, industry, untiring zeal, and steadfast consecration to the interests of this school; therefore,

Resolved, That to his organizing faculty, his earnest efforts, and to his unselfish devotion to its interests, the Philadelphia Dental College owes to an extent not to be estimated, its successful career as an educational institution, and its high reputation both at home and abroad: trials, impediments, opposition—circumstances which operated as discouragements to others—only serving to stimulate him to fresh endeavor.

That in his death the dental profession has lost one who has done as much perhaps as any one man to elevate the standard of dental education and practice in this city, in this country, and to no little extent throughout the world; his consecration to the furtherance of all efforts which in his judgment would advance the interests of the dental profession having so won the confidence of his brethren as to command their recognition of him as an able and trustworthy leader.

That, appreciating his talents, his attainments, his labors, his earnestness and his self-sacrificing spirit in all that concerned the interests of this school, we especially cherish the memory of his numerous manifestations of personal interest and kindly helpfulness.

That, with a copy of this expression of our appreciation, esteem, and affection, we tender to his widow and children our sincere sympathy.

At a meeting of the Alumni Association of the Philadelphia Dental College, held March 5th, 1879, the following preamble and resolutions were adopted:

Whereas, We have received the painful intelligence of the decease of our beloved and honored professor, Dr. J. H. McQuillen; therefore,

Resolved, That in his death the Philadelphia Dental College has lost one who was ever ready to devote his time, talents, and best efforts to the promotion of its highest interests.

That the profession has lost an earnest worker in the cause of dental education—one to whose indomitable energy and perseverance the college was indebted for its success, in which every graduate and student feels a legitimate pride.

That a copy of these resolutions be forwarded to his bereaved family, with the expression of our sincere sorrow and sympathy.

At a meeting of the students of the Philadelphia Dental College Wednesday morning, March 5, 1879, the following resolutions were adopted:

Whereas, Our friend and beloved teacher, Dr. J. H. McQuillen, has been removed by death; it is hereby

Resolved, That we receive the intelligence of his sudden decease with deep regret and heartfelt sorrow.

That in his death the Philadelphia Dental College loses a most able instructor, the dental profession an arduous and conscientious worker, and society a useful and honored member.

That a copy of these resolutions be sent to the family of the deceased with the assurance of our deep sympathy in their bereavement, also that a copy be furnished the *Dental Cosmos* and the city papers.

Prof. Philip H. Austen, D. D. S., M. D.—At the monthly meeting of the American Academy of Dental Science, held in Boston, February 5th., 1879, the following resolutions were adopted:

Resolved, That the Academy have heard with deep sorrow of the death of one of its Honorary Members, Prof. P. H. Austen, of Baltimore, and in recognition of his character and ability, we desire to express our regret for his loss and our appreciation of his worth.

Resolved, That our Academy, and the profession of dentistry, have rarely been called upon to record the death of one whose loss will be more deeply lamented or more seriously felt.

Resolved, That in Dr. Austen's long connection with the Baltimore College of Dental Surgery, as one of its leading professors, he ably and successfully filled a high place of activity and usefulness, and discharged the duties entrusted to him with high honor and rare ability; and all the graduates of the Baltimore College, who sat under his instructions, and the dental profession everywhere, will ever remember with gratitude the labors of Prof. Austen, his numerous and valuable contributions to the science and literature of his profession, his personal inculcations as a teacher, and the deep interest he always manifested in his work.

Resolved, That as a Christian gentleman of learning and culture, he has left the testimony of a name and character that will endure so long as eminent services and faithfulness to duty shall be held as worthy of commemoration.

Resolved, That we tender our sincere and heartfelt sympathy to the family of the deceased in their heavy bereavement, and that a copy of these resolutions be presented to them, and a copy be entered upon the records of the Academy, and published in Dental Journals.

ELISHA G. TUCKER, *President*,

JACOB L. WILLIAMS, *Vice President*.

EDWARD N. HARRIS, *Cor. Secretary*.



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